The Builder.

No. CCCLXXIV.

SATURDAY, APRIL 6, 1850.

THE destruction of St. Anne's Church, at Limehouse, by fire, on Good Friday, suggests a point or two for consideration, and ought to serve as a warning and preventive. St. Anne's, Limehouse, was one of the fifty churches erected by Act of Parliament in the reign of Queen Anne, and was designed by Nicholas Hawksmoor. It was commenced in 1712, completed in 1724, but not consecrated until the 12th of September, 1730,* in which year the parish was formed by Act of Parliament out of the hamlet of Limehouse and part of that of Ratcliffe, original appendages to the parish of St. Dunstan, Stepney. Stowe speaks of "Lime-hurst or lime-host, corruptly called lime-house;" and Pepys has the following note under the date 9th October, 1661:—"By coach to Captain Marshe's, at Limehouse, to a house that hath been their ancestors' for this 250 years, close by the lime-house, which gives the name to the place."

St. Anne's is a (Portland) stone church of very large size (called 145 feet by 78 feet in gross), with a lofty tower and steeple: it had four stone composite columns inside carrying the ceiling, and is said to have cost 38,000*l*. The east window contained a painting on glass by Buckler, "Christ Preaching on the Mount;" and there was an organ, built by Bridge, which cost 1,000*l*. Nothing of these remain but the memory. The interior of the church is wholly destroyed. The fire broke out between the ceiling and the roof; the roof fell, and everything below that was combustible was burnt. Much of the stone-work is calcined, including part of the steeple, high up.

Now as to the cause. We journeyed eight miles out and eight miles back the other day to look at this for ourselves, but the chief fireman in charge, although we told him our errand, would allow us no glimpse inside, and was not in a fit state for us to discuss the question with him to any purpose. We must take, therefore, the statements of others.

The interior of the church is approached by a lofty flight of steps, and in consequence of this elevation, the vaults are above ground, with the exception of about 3 feet of their height, and have, at the end of paved passages which traverse them, windows opening into the churchyard. In these passages at either end of the church stand hot air stoves, by means of which the edifice was warmed. They were fed with air from an opening made for the purpose in one wall; and the smoke descending, first passed through a flue underground to the opposite side of the church, where it entered another flue in the centre of the main wall, having an escape on the roof. This latter flue, which is about 18 inches square, in a wall of 4 feet 6 inches thick, was part of the architect's original design. There are four such in each wall, and their purpose appears to have originally been to ventilate the vaults. When the present stoves were put up, use was made of one of these flues on each side of the church for the escape of the smoke from the furnaces. About five weeks ago, in consequence of the descending flues frequently becoming stopped up, an iron pipe 12 inches in diameter was substituted for the common brick flue previously connecting the furnace with the old flue in the centre of the wall. A small furnace was also inserted at the junction of the iron pipe with the wall, where the stoker has been accustomed, when about to light the fires, to burn a handful of shavings, in order to get the damp air out of the flue traversing the wall. The draught was very strong, and probably carried up the shavings in a state of ignition. Now examination, it appears, has shown that the end of one of the girders supporting the roof, actually *entered the flue*, at the north-western corner of the church, and it is unnecessary for us to say, if this be so, the beam, too, being thoroughly dried by the continued action of the fire, perhaps even decayed, that the cause of the destruction of the church is tolerably obvious.

The fires which have been originated by timber being let into flues, apparently too far from the fireplace to be dangerous, are not to be counted. In a sixteenth century building, wherein works are going on under our direction, we found last week a piece of timber in the face of the chimney-breast, put in to relieve the lintel over the opening of the fireplace, and forming, in part, one side of the flue. It was black and charred, and although it *had* led to no evil consequences during many years, might next week have caused the destruction of the building.

In the case of Limehouse Church, if the statement be correct, no blame attaches to the architect: the flue was for ventilation, not for a furnace; and the error was committed by those who made the fire communicate with it, without first taking proper precautions.

The principal object we have in view in noting this occurrence, is to induce a proper examination, by professional eyes, of the city churches generally, with respect especially to the means used for warming them. Several of these churches are exposed to great danger by the position of iron smoke-pipes, introduced to the great disfigurement of the building, and passing close to woodwork. We would exhort the authorities to be wise in time,—to remove the possibility of danger, so far as it can be foreseen, and insure the building.

The annual loss to the community by fire is something enormous, and, unfortunately, the experience gained so dearly, produces little improvement. The recent destruction of an immense amount of property in a Manchester warehouse, in a singularly short time, ought to produce an alteration in the mode of constructing these buildings; yet in all probability the old course will still be pursued. If it were desired to construct a building capable of being burnt down in the shortest possible time, a better model than that offered by some of the Manchester warehouses could scarcely be hit on,—with its large well-holes, wooden staircases, and continuous wood linings and casings.

To return, however, to Limehouse Church. Judging from the exterior of the building, we should say the walls may be kept standing; and, fortunately (this should serve as another hint to churchwardens), the edifice was insured at the beginning of the year, as we are told, in the face of some opposition, for 5,000*l*.—so that the expense to the parish will not be ruinous. Had the steeple fallen, we certainly should not have counselled *restoration*. It is an incongruous and inharmonious composition, very far inferior to other works by the same architect, and has little to recommend it beyond something of grandeur resulting from its size and mass. In St. George's, Bloomsbury, and St. Mary Woolnoth, Lombard-street, Hawksmoor established his claim to be considered a man of genius and skill: if the evidence had been confined to St. Anne's, Limehouse, our verdict would have been different.

Hawksmoor (few of our readers will need reminding) was placed with Sir Christopher Wren, as a pupil, in his 17th year (he was born 1666, the year of the great fire), and was afterwards deputy-surveyor under Wren, at Chelsea College, and clerk of the works at Greenwich Hospital. He was appointed superintending surveyor to all the new churches after the death of Wren, and is said to have been associated with Vanbrugh at Blenheim and Castle Howard. Like that poet-architect, whom, too, he in some degree resembles in style, his fame long suffered from an *epigram*, but has now outgrown it.

* Malcolm's Londinium Redivivum, vol. ii., p. 81.

THE ARCHITECTURE OF THE DAY.

MUCH has been already said on the architectural vices and follies of the age, and some points in the following paper have doubtless been touched upon by others; I have, however, restricted it to the expression of my own views on the subjects adverted to. As these refer chiefly to design, I would first observe, that this is the highest department of the art, which gives it its greatest dignity, and calls for the noblest faculties of the mind. Judgment, taste, fancy, feeling, imagination, are all called into play in designing a perfect edifice, which is a production of "the vision and the faculty divine," and is of the same category as an epic, a statute, a picture, or a symphony. The claims of architecture to the respect of mankind are of a peculiar nature: unlike its sister arts, painting and sculpture, it is also a science: it has to satisfy the material wants of man, his social and sanitary requirements. Art, however, is greater than science, and the architect has cause to be proud of his connection with it. This is a feeling in which, of course, the student may participate, and not only the student, but the operative, may share it. Art sheds a halo around the lowest of her votaries, and to make this more generally understood, would perhaps be to furnish the means of hallowing and ennobling the minds of thousands, and snatching many a victim from the jaws of vice. Nothing is more common than to see intelligent workmen taking an interest and pride in the scientific part of their work, beyond the mere discharge of their duty, or the obtaining of their livelihood: why should they not in the artistic? The mason or joiner would certainly be none the worse if given to know the true nature and relations of his daily occupation; that, though his own part may be comparatively humble, and mechanical, it is a vehicle, or may be so, for the intuitions and inspirations of genius. Such a knowledge might inspire him with greater zeal to attain to excellence in his work, which is by no means unimportant. No architect is quite independent of the mechanic for his reputation. The production of the beautiful is, in some measure, dependent on the efforts and feeling of the workman. To produce a perfect work all employed must go hand in hand: one feeling should animate them. Holding widely different ranks, they yet, with torch in hand, form one grand procession to the shrine of the beautiful. But, to my immediate subject.

The great objection that has been urged against the architecture of the present century is, direct undiscriminating imitation of ancient buildings, to the neglect of originality, consistency of character, and other qualities. On this I would offer a remark *en passant*;—whilst acknowledging the servility of direct imitation or copying, yet I consider a broad estimate of the recent state of architecture would look upon this and the precisions of style to which it gave birth, as a step in the right direction,

as a servitude which, though neither creditable to the originality of taste, nor, if persisted in, favourable to the progress, of the individual architect, is still (if regarded, as I think with respect to the entire history of the art it should be, as a stepping, not as a standing stone), one which establishes the fact of progress, and holds out the promise of ultimate freedom. There was a danger of the art getting fixed on this stone as on a pedestal, petrified, if I may so speak, for looking back; but that danger past, the most rigid copy of a correct building, in any authorized style, among our recently-erected churches, if considered comprehensively as regards our present architectural status, should be looked upon as a decided advance beyond the brickbuilt barns or architectural hybrids which bygone years erected to the honour of religion. It is at least indicative of,—1st, a return from absolute architectural nonentity to something of definite style; and 2ndly, a cause of the praiseworthy restoration of our ancient architectural gems to their primitive lustre,—many, too many of which, under the combined influence of time and of quasi-church-beautifiers, bade fair to sink into a state of architectural idiotcy. Something of this matter, both as to bane and antidote, has been seen in our time in Oxford. It is not long since the visitor entered Waynflete's beautiful Gothic quadrangle of Magdalen College through a Doric gateway,—when, standing beneath the vaulted roof of his ante-chapel, he gazed up to the flat expanse of whitewashed plaster with which a quasi-classical taste had ceiled his choir, whilst the college dignitaries, seated in their classically-moulded-and-panelled stalls, heard the "pealing organ blow" from out a classic organ case, in a classic organ loft supported on fluted Corinthian columns. Whilst admitting, therefore, the impropriety of this direct conventionalism as a persistant practice, we should still, perhaps, looking at what has been, be led to view it as an omen of good promise as regards what shall be hereafter.

But, in whatever light this be considered, it is unquestionably true that we are now moving in the right direction: many buildings have sprung up around us, under the influence of a better light, which will not discredit the age we live in, nor the land either. Some lately erected in London, Liverpool, Manchester, and other towns, are, in many respects, of the genuine stamp. Perhaps the chief thing that could be urged against many of our recent provincial erections is their diminutiveness: our churches and chapels, after visiting the great buildings of London, or the mediæval and academic structures of Oxford and Cambridge, look too much like models. In reference to one or two meritorious compositions of late erection, I would say, fewer and larger parts would have been preferable: had they been one and a-half or twice the scale, they would not only have been beautiful but imposing and powerful. Size is an element of power in architecture: beautiful curves and groupings, fine proportions and rich details, will please, but not astonish and impress,—which it is within the scope of architecture to do. Too often, architects are overruled; though I am convinced that, if they were true to themselves, they might create more deference, on the part of their employers, to those great principles on the observance of which must ever repose the wellbeing of art, and the honour of its professors.

But though we are, doubtless, advancing,—to look back and detect the faults which we have been committing, and are still occasionally committing, to criticise existing buildings, and expose their shortcomings, descanting, at the same time, on their merits, I consider by no means an unprofitable employment. While it is done in the right spirit and under such conditions as to avoid the possibility of giving personal offence, it is perhaps the best mode of illustration that could be adopted.

One of the greatest defects of our present practice is incompleteness; we make niches, but put no statues in them; on pediments we place the pedestals, without the figures, of the acroteria; chimneys, the most prominent objects, are without decoration. One of the chief difficulties with the designers of classic and Italian villas, and town buildings in general, has been the chimneys, which in general are suffered to deform the roof, instead of being called into play as ornaments to vary the outline, and give lightness and elegance to the composition. Any object obtruding beyond the general line of building, upwards, should be of a light and ornamental character; such a feature seems by its very protrusion to entreat us to decorate it; but, generally speaking, no attempt is made to render it pleasing to the sight, which could as well be done in the classic or Italian styles as in the Tudor; chimneys are, therefore, generally eye-sores. On this subject my advice is, ornament the chimneys, do not attempt to hide them, even in the most decorated classic designs. They are no disgrace to the exterior, any more than the hearth and fire-place are to the interior; nor need roofs be hid or gables omitted, both may be taken advantage of in the composition. As to the chimneys, heed not their upper part growing black with smoke—that, in domestic buildings, will but give the warm and comfortable appearance which should characterize dwellings; all marks of use, time, and weather contribute to the picturesque. It is quite absurd to sneer at the association of Greek pediments or Corinthian columns with English, or rather modern chimneys; had the Greeks known the comfort of our fire-places in their houses, would they have deemed it necessary to omit the portico to make way for the chimney? All we have to do is, to give them an agreeable form and finish, make them worthy of the company they are introduced to, and produce a harmony between them and the essentially decorated portion of the edifice.

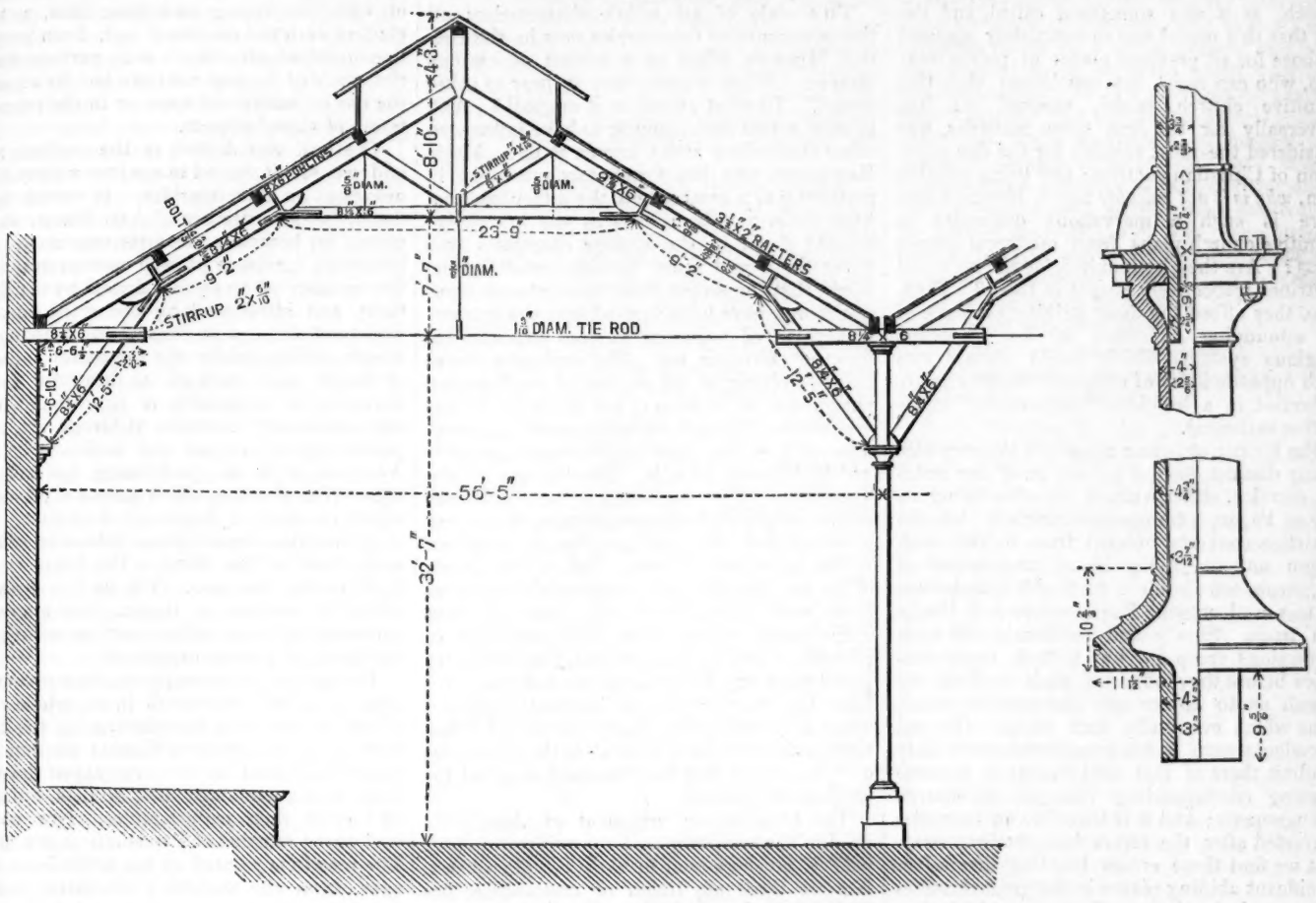
So far from chimneys being any real objection, we in fact want objects so protruding: where there are many breaks in the front, by projecting or receding parts, they are not so much called for; but in straight, unbroken façades, they are useful in giving a varied outline to their summits. One objection I have heard urged against classic buildings is, that we cannot have a picturesque sky line; but the impression has arisen from a paucity of invention shown by their designers, in neglect not only of the chimneys for this purpose, but of providing other means. Nothing for the purpose is so beautiful as statues, and this is equal to Gothic finials, or any other termination used in any style; accordingly, on the apex and at the foot of pediments, and along the summits of façades, over columns, pilasters, and piers, in buildings of great pretension, statues are introduced; but, of course, the expense precludes their extensive employment. In the same position, on buildings of less pretension, urns and vases are used,—in the design and form of which very little diversity prevails, but scarce any other crowning object seems dreamt of. Busts are less expensive than statues, and would, properly elevated, form effective terminations. But the multitude of beautiful objects of the animal and vegetable kingdom are forgotten. What gracefully formed quadrupeds, in various attitudes, might be selected for this purpose! What still more graceful objects are presented by the feathered creation; while, to many of these, as indeed to quadrupeds, associations attach that would render them assisting to our purpose of characterizing edifices, used either symbolically or otherwise. On the garden side of a country house, doves, and other peaceful birds, would be appropriate finishing ornaments. Not to speak of the creatures of "fancy's world," what beautiful objects for this purpose might be formed by grouping flowers and fruits. Graceful knots of foliage might terminate the apex of a small classic pediment, as well as of a Gothic canopy; groups of objects or articles illustrative of the purpose of the building might be also used. But, without imitating nature at all, what a rational and delightful source of ornamentation have we, for this purpose, in geometrical figures!

But the want of completeness to which I would most earnestly call attention, is manifested in the interior of our buildings, which in general exhibits decoration in no respect fulfilling the promise of the exterior. Disappointment is the uppermost feeling on entering many a building on whose exterior we have dwelt with pleasure; some are not in good taste, others are in an inferior style, while a third description presents a poverty of interior fitting, that ill accords with the expensive masonry without. The ceiling is, perhaps, the part of an apartment that calls most loudly for decoration, and no architectural feature is more susceptible of it, where it might be introduced with more effect, or give more pleasure to the inmate; yet this feature we almost invariably neglect. We naturally look up for beauty; however lovely the earth, the sky, both night and day, presents us with greater charms; we are cheered, in our out-door hours, by its ever-changing picture, for which a flat white plane is a miserable substitute in our in-door life. To houses of the very highest class these remarks will apply, for it is a feature which has not had its due proportion of attention, in point of decoration, in any class of buildings, from the cottage to the palace. There can certainly be no more fitting place for decoration in the habitation of a being created upright: can inconsistency be more extreme than that presented by thousands of apartments, where a rich, elaborately decorated carpet is under the feet, and a plain, dead, flat ceiling above? In the interior of Arabian buildings the ornaments almost invariably become richer, more delicate and minute, as their height from the floor increases; and the most exquisite productions of the artist are lavished on the ceiling.

With respect to the form, the curve is at all times preferable to the flat, though the latter, by various means, is capable of great beauty also. No very great additional height is required in order to have a curved ceiling, as, whether coved or segmental, the rise need not be very great. For rooms of great pretension there is no form more noble and natural than the vault and dome, particularly the latter, whether hemispherical or segmental, as far as it suits the plan, or can be adapted by pendentives or otherwise. It is the best substitute for the blue vault of the sky, the starry concave of the heavens. It was a fine idea of the builders of the mosque of Saint Sophia at Constantinople, a conception in advance of ours, to make the curve of its dome so flat that it should seem to correspond with that of the sky, and be a portion of the firmament. We want an enlarged, improved, enriched, and, at the same time, inexpensive system of interior decoration, for domestic and ecclesiastical, commercial, and other buildings, in our Anglo-Classic styles. For churches, collegiate, and other buildings, in the Pointed style, we have examples in our cathedrals and other buildings which prove that the genius of interior decoration was once amongst us, as well as the taste to employ it. At Henry the Seventh and King's College Chapels,—the oratory at Beauchamp Chapel,—the Temple Church,—Wolsey's Hall, Hampton Court,—Christ Church Hall, Oxford, —Westminster Hall,—and others, we have ceilings and roofs that might vie with any that Europe could show. For assistance in evolving a system of classic decoration, we might look to some parts of the continent. Exterior decoration there, has sometimes, probably, been carried too far,—a few continental edifices exhibiting ornaments so minute and fragile as to seem at least unfit for exposure to the weather in any climate. But this could not be said of interiors. The Moorish or Morisco-Spanish architecture suggests to us what richness might be produced by very simple means; their icicle pendants, inlays, and casings, and purely geometrical and imaginative ornaments, are very effective, and with them they often produced greater results than we, with all nature to imitate, have attained to. But the art of interior decoration was better understood, and more successfully practised, in the great age of modern art in Italy, and, indeed, throughout the Middle Ages, than at present in any country. We never had any decoration to be compared with the mural and fresco paintings of the Italians, and there is probability in the supposition that their system was obtained from remains of the ancients, which time or violence has not spared to us. Beside the curved and richly-emblazoned ceilings produced by the Italians, and the pictorial embellishment of their walls, ours might symbolize poverty itself. The ceilings of the principal apartments of a Roman, Genoese, Venetian, or Florentine Palace, were considered as most important features,—and on their design and execution the highest talent was employed. In ecclesiastical buildings the contrast with ours would, I fear, be still greater. Whilst the interior of the churches of Italy glow with

ROOF OVER THE NORTHERN RAILWAY, PARIS.

M. REYNAUD, Architect.



Principals, 16 feet 5 inches apart, centre to centre.

every rich hue of the marble quarry, and are virtually galleries of art, what is the aspect of ours?*

Samuel Huggins.

ROOF OF THE NORTHERN RAILWAY, PARIS.

This roof, erected over the arrival and departure sheds of the Northern Railway, from Paris to Brussels, is in two spans, each of 56 feet 5 inches from walls to centre of columns. This range of columns thus forms the centre line of the shed.

The merit of this roof lies in the fact that all the scantlings and the lengths of the timbers are such as are suited to the dimensions of the timber brought to the Paris market. It is to be observed, that in Paris the continually augmenting price of oak renders the use of Baltic timber almost imperative. But the state of credit in France (not only since, but also antecedent, to the late revolution), prevents the introduction of the first-class Russian timber, which finds a better and readier market in England. In Paris, therefore, it is very difficult to obtain large scantlings; and M. Reynaud has very wisely adopted those which admitted the employ of the smaller and cheaper Swedish timber usually met with.

The Swedish timber is certainly not so sound nor so durable as the Russian; but it is much cheaper, in the proportion of 86 to 106. Its usual scantlings are about 36 feet in length, by from 10 inches to 1 foot square.

The practice of the French architects is to make the common rafters only 3½ inches by 2 inches, and to admit them of Norwegian timber. The French slates are so much lighter than our own, that it is unnecessary to use the same sized rafters we do. The usual space from centre to centre of rafters is 1 foot.

The Northern Railway, however, is covered with boarding and zinc,—No. 15 of the French gauge.

The columns are of cast-iron, and serve as descent pipes for the rain-water,—a very bad system, by the way, for it is extremely difficult to examine or repair them, if any engorgement take place.

The appearance of this roof is very light; but it may be questioned whether there be not too much wrought-iron for one exposed, like this, to the sulphureous vapours of the locomotives in steam. Indeed, we may question whether it be not a very great error to use wrought-iron with the prodigality we are accustomed to in such situations.

* To be continued.

HOW SHALL WE BUILD OUR CHURCHES?

Mr. Pugin, in his letter headed, "How shall we build our churches?" commences by declaring his adhesion to the "important principle of *reality, both in design, material, and construction*;" a principle which I also maintain to be the only one admissible in connection with the erection of a Christian church, but which principle, fairly carried out, affords one of the strongest of arguments against the adoption of the favourite model for a Christian church.

Mr. Pugin asserts that the mediæval model is the most perfect exposition of Christian truth, whose mysteries it symbolizes in its plan, arrangements, and minute details. I, on the contrary, affirm that this model is a false one, false in its arrangements, false in its symbolization, utterly opposed to the spirit of the primitive models, utterly opposed to the first principles of Christianity — positions which I not only affirm, but am prepared to prove—to prove not only theologically but architecturally.

The first converts to Christianity were either Jews or Pagans, both having no other idea of religious worship than as connected with temples and temple rites, with which notions the men of that age were so completely imbued, that to dispossess them of these views must have been a shock as great to their moral feelings as the stripping the skin from their bodies would have been to their physical sensation. It is scarcely then within the bounds of probability that any honest man, if sane, could believe that the Christian converts would invent or adopt an entirely new model for religious structures, if the old one had been deemed suitable. No greater incidental proof could be adduced of the great difference in spirit between the Christian system and the Jewish and Pagan, than in the notorious fact, that the model all but universally adopted by the primitive Christians, was so diametrically opposed in its arrangement and use to the temple model. The leading characteristics of the latter consisted in its sanctuary, or holy place, in its altar with a material sacrifice, and in its exclusion of the worshippers; the priests only being admitted within the sacred precincts. The leading characteristics of the former are so many absolute negations of temple arrangements; the church containing nothing resembling the nature of a sanctuary, nothing even to remind men of an altar, and the believers were all within the structure, which for centuries was all but invariably an adopted or a constructed room, thus bearing incontrovertible evidence to the great Christian verity that the Christian system was a social one, that its members were intended to form one great family; the aggregated families composing the whole, having the same relation to each other collectively, as the individual members of each such family occupied in "the church which is in every house,"—a significant phrase, which, to a candid mind, is sufficient to prove the nature of the relation that existed between the flock and their presidents or ministers, who were the chosen representative fathers of the congregated family, and as such, occupied the seat on the platform at the end of the room, such platform being called the chancel, from the low railings, or *cancelli*, which, to prevent the occupant of the platform from falling, stood at the edge of it. From this chancel, or platform, the president always addressed the assembly, or, in other words, preached to them; and on this platform the communion-table *was not placed*, but occupied a position in the midst of the congregation.

Mr. Pugin speaks very sneeringly of *conventicles*. Is he ignorant of the fact that this was one of the earliest designations for a Christian place of assemblage? the word being derived from *conventus*, an assembly or meeting together, the very word which originated the term "convent," and for which "a meeting-

house" is a synonymous translation. Bearing in mind the scriptural definition of the church, "a congregation of faithful men," the selection of a room as the model for the conventicle, or church, as it was sometimes called, and the fact that this model was so completely opposed to those for all previous places of public worship, who can resist the conclusion that this primitive church model, adopted all but universally for the first seven centuries, was considered the most suitable for the due exposition of Christian doctrine; and being suitable then, *why is it not suitable now?* How is it that there is such a marvellous difference in primitive church plans from mediæval church plans? Are they both suited for the rites and doctrines respectively taught in them? Then, if so, they afford the most striking evidence of an astounding difference in the respective religious systems which could dictate two such opposite ideas of religious worship as are embodied in a basilican "conventicle," and a Gothic cathedral.

The former structure negatives the very idea of any distinct class of priests, or of any material sacrifice, either without the other being, to Jew or Pagan, a transparent mockery; but the Christian converts, imbued from infancy with Pagan notions, living in an atmosphere of Paganism, were subject to fearful temptations to mix and entwine Pagan errors with Christian truth. Slowly and insidiously did such perversions creep in, but it took many centuries before they obtained such hold of the church as to induce the alteration in church plans which eventually took place. The old precedents were in too great numbers in Italy to admit there of that vital change in doctrine effecting corresponding changes in church arrangements; and it is therefore in countries converted after the errors had obtained sway, that we find these errors building themselves significant abiding places in the great churches and cathedrals of the middle ages, which thus became so many petrifactions of the corruptions so awfully deforming the pure features of Christianity. Wherever the old basilican conventicles exist, there we find that every thing in them lending the least countenance to corrupt views of Christianity are innovations, "unreal," having no connection with the structure; but in France, England, Germany, there we find these innovations becoming essentials in the framework constructed portion of it; there we find chancels growing into "transubstantiators;" low railings growing into exclusive screens; the wooden moveable table petrified, and transmogrified into a constructed altar; there we find those whom the apostles addressed as '*partakers of the heavenly calling, kings and priests unto God!*' abjectly, pitiably degraded from their high position, and their ministers, changed into priests, boasting that their proper position was with their feet on the necks of kings,—a state of things which fully justified Bishop Durandus in asserting that the pavement of the nave symbolized the people who were to be trodden under foot, while the chancel symbolized the priests who were to be held in great honour.

Will Mr. Pugin venture to put on paper any explanation of the extraordinary difference between the ancient model and that which he so zealously advocates and so coolly calls "Catholic?" Will he venture to give a common-sense reason for designating a style as "Pagan," or "Christian?" Plans of religious structures have been originated or influenced by doctrines, but no style of architecture ever was; and the absurdity of supposing such a thing is as great as that of maintaining a book to be Pagan if written in a tongue once invented or used by Pagans. The exquisite beauties of the Gothic style I most fully admit and enthusiastically admire, but I utterly deny its connection with the spiritualities of Christianity.

JOHN ELLIOTT.

REBUILDING OF THE TEMPLE OF JERUSALEM.—It is stated in the *Berliner Allgemeine Kirchen Zeitung*, that the Jews have obtained a firman from the Porte, granting them permission to build a temple on Mount Zion. The projected edifice is to equal Solomon's temple in magnificence. Millions of money are said to have been collected for this purpose in America alone. (?)

REMARKS ON THE ASSYRIAN SCULPTURES DISCOVERED BY DR. LAYARD, AND ON SOME PECULIARITIES OF ASSYRIAN ARCHITECTURE.*

THE style of art which characterizes all the ornaments on the marbles now in the British Museum offers us a subject of curious inquiry. What relation does it bear to other styles? To what extent is it original? And to what extent does it appear to have influenced other succeeding styles known to us? Major Rawlinson, who has fortunately succeeded in mastering to a great extent the difficulties that have hitherto hidden from us the knowledge handed down in the strange characters that cover these and other remains, entertains no doubt that the earlier ruins from whence these sculptures have been derived bear the extraordinary date of twelve or thirteen centuries before the Christian era. The sculpture therefore is probably as old as most of the Egyptian antiquities we possess; yet the style of the ornaments, although certainly partaking somewhat of Egyptian character, is in many respects widely different from it. The borders of the linen wrought in successive stripes, and those stripes subdivided into a succession of squares, is certainly an Egyptian peculiarity, prevalent in this Assyrian costume. Indeed the people of the two countries, although widely separated from each other, may most probably have interchanged commodities, and goods of so portable a kind as bales of linen may well have found their way from Egypt to Assyria. We have the incontestible and contemporary evidence of Ezekiel, that Egypt furnished "fine linen with embroidered work" to the merchants of Tyre, who it may be presumed supplied the markets of Nineveh.

The honeysuckle ornament so abundantly used in the sculpture under consideration is, I believe, nowhere seen in early Egyptian work. Nor are there any traces of resemblance between Assyrian and Egyptian design in the beautifully and freely-drawn figures of animals so profusely introduced into their work by Assyrian artists. We seek in vain here for those stiff and formal and very peculiar ornaments round the neck, consisting of a continued repetition of strokes of the pencil, which we see constantly recurring in Egyptian work, especially on the mummy cases. The Assyrian artist seems to have completely relieved himself from the rigid conventional manner of the Egyptian, and to have acquired considerable facility and freedom of execution: examine the slightly etched figures of winged bulls and other animals pervading the dresses of almost all the larger figures on this sculpture, and we find them drawn, or rather sketched, in a style that would do credit to the best artists of the present day; and when we consider the enormous extent to which this mode of decorating the walls of their buildings prevailed, not only at Nineveh, but at other buried cities which have been recently explored in the same country, it seems fair to presume that the trifling and very subordinate details to which I have been adverting must have been the work of common and ordinary artisans.

Let us now compare the ornaments under review with the more familiar forms of Greek art: and here I think we find so strong an analogy, and in some cases such a striking resemblance, as to force upon us the conclusion that the artists of Greece derived far more of their art from the banks of the Tigris and Euphrates than from the banks of the Nile; and Egypt must, I think, relinquish a large portion of the honour that has been so long accorded to her of having been the mother of Greek art. The honeysuckle ornament already alluded to as occurring abundantly in this sculpture is both in form and treatment almost purely Greek.

The Guilloche scroll, so characteristic a Greek ornament, occurs very accurately chased on the scabbard of one of the swords of the Assyrian warriors. An ornament much resembling (although not identical with) the labyrinth fret, also appears etched as an ornament on a dress. The classical enrichment, commonly called the bead and reel, is here of very common occurrence. The running ornament of animals and foliage grouped together, constantly occurring in this costume, is a perfectly classical feature.

* Part of a paper read at ordinary meeting of the Institute of Architects, 18th ult.

While inviting attention to the germ and gradual growth of that beautiful system of decoration which has been handed down to us by the Greek artists and has been the object of imitation during succeding ages, not excluding even the mediæval age, I am tempted to suggest whether much of it, perhaps almost the whole of it, may not have had its origin in the use of sacred emblems or in the representation of sacred objects.

The bull was deified in the earliest ages, and we see it carved in profuse variety as an ornament on these marbles. It occurs abundantly in the sculpture of Asia Minor, and in classic art became a favourite ornament. The lion, also, furnishes us with another very familiar instance of an animal deified by the Egyptians, and introduced by the artist in every variety of form as an ornament. The honeysuckle, which, under the wonderful influence of Greek taste, became so beautiful and so universal an ornament, is here found many centuries before the birth of Greek art, as representing the sacred tree before which the Assyrian priest is performing his religious rites. The fir cone, which plays so prominent a part in classical decorative sculpture, is in these marbles almost always held as an offering in the hand of the priest. The lotus is another familiar instance. We find it first the object of worship in Egypt, but afterwards converted into one of the most beautiful of all the forms of antique ornament.

The rosette, or patera, is perhaps one of the most universal ornaments in the whole range of art. It occurs in the paintings of the Egyptians, and is carved on Hindoo sculpture; it was embroidered on the garments of the Assyrians, and ornamented their armlets, bracelets, and even their whip-handles. Nor on the sculptured remains of Persepolis is it wanting. The rosette is painted on the fictile vases of all ages, from the earliest to the latest, and has ever been one of the most common of all the ornaments of architecture. May I not venture to claim for this form, also, a sacred origin? The winged circle was the emblem of the deity in Egypt, Assyria, and Babylonia. It occurs frequently in the marbles before us, and is usually filled in with what has the appearance of a rosette, but, when the circle is large, we find the inserted figure to have a star-like form, or a radiation of tapering flames: may this not be supposed to typify the sun, the great and earliest object of idolatry? Is it not at least a plausible hypothesis that this figure, whether it be a conventional representation of the sun, or a star, may, in the course of time, have assumed, in the hands of the artificer, the varied and beautiful ornament with which we are so familiar?

Dr. Layard has remarked with truth on the very wide difference existing between the style of Assyrian architecture developed in these remains, and the architecture of Egypt. There appears here to have been an almost total absence of columns. Dr. Layard gives us a representation of one instance occurring in a bas-relief found in the ruins at Khorsabad, which he presumes to be of later date than those at Nimrood; and in the slabs in the British Museum one example occurs, wherein three pillars are introduced, but of proportions so slender as to lead to the presumption that they were of wood; a supposition the more probable, as they appear to support, not a horizontal entablature, but the frame-work of a kind of tent: it is worthy of remark, that these pillars have as their capital the horns of the goat so arranged as to suggest at once the Ionic capital, and the Khorsabad example is also of this type.

The absence of columns may possibly be due, in great measure, to the flat, alluvial character of the district between the Tigris and Euphrates, which furnished the soft alabaster of which these slabs are formed, but no hard building stone suitable for columnar architecture. Rooms, however, 35 feet and 40 feet wide, such as occur in the palaces explored by Dr. Layard, would not have been roofed over without a greater degree of constructive skill in carpentry than we have any reason to suppose was possessed in these early ages. Perhaps, therefore, the horizontal beams of which the roof was formed may have been supported by wooden pillars which are now perished, or which may have been burnt when these temples were sacked,—a fate which most

of them have probably undergone. That pillars were used to support the roof-timbers is the more probable, as it appears that the apartments were lighted from above by apertures in the roof, which would interrupt the continuity of the timbers, and render immediate supports absolutely necessary. It may be asked, why assume that the Assyrians were ignorant of framed trusses, by which the widest spans might be roofed over without the assistance of intermediate supports? We cannot prove the non-existence of trusses, but we certainly have no evidence that such artificial contrivances are of this remote date. We see no indication whatever of pitched roofs in any of the sculptures before us, nor, I believe, at all in Egyptian architecture. Even in the Lycian examples we do not find, until we come down to the Greek period of art, any example of a pediment, which is but the gable end of a pitched roof. These Assyrian palaces, then, had, as I presume, flat, terraced roofs, as we know the Egyptian buildings had: it is the present fashion of the East, and that it has ever been so there is abundant proof in the Scriptures. It was a law of the Jews that no roof should be built without a parapet, so that those walking thereon might be rendered safe. In the sculpture before us are various representations of small domestic buildings; they have no sloping roofs, but are rounded at top, as if formed of slight timbers bent round, which were probably wattled over and covered with mud like the wigwams of the present day. The pavilion, also, to which I have already adverted, appears to have had its covering stretched over similarly bent timbers. It does not seem improbable that the curved and pointed roofs of the Lycian tombs own a similar type, and are a marble version of a roof of bent timbers.

Dr. Layard discovered no indications of windows in any of his excavations; but that windows were used in Assyrian architecture is proved by the representation of them occurring in many of the slabs: nor can we imagine any other mode of gaining daylight in the lower rooms when buildings were of several stories in height, which, by these bas-reliefs, appears to have been the case. These windows are square-headed, generally, and have the peculiarity of a double or rebated external reveal, by which means, like the splay in Gothic architecture, additional light was gained, the actual apertures being narrow. This square sinking in the jambs of a window is, I believe, without a parallel in Egyptian architecture, and is not seen in purely Greek buildings; but it is singular that this is a feature pervading the very ancient tombs of Asia Minor, recently made known to us: many instances of it occur in the Xanthian marbles at the British Museum. Whatever may be the date of the marbles from Xanthus, they certainly appear to be a very remarkable link between Greek art and some other very different, pre-existing style.

The occurrence of circular-headed openings in the fortified buildings of Assyria, as plainly represented on these bas-reliefs, dissipates at once all ideas formerly pretty generally entertained of the comparatively recent discovery of this principle of construction. Dr. Layard mentions a brick vaulted chamber which he brought to light among the ruins at Nimrood, and other similar discoveries are reported to have been still more recently made by him. It seems a reasonable conjecture that the arch may have been first used in an alluvial country like that part of Assyria, where abundance of bricks were made, and where the difficulty of transporting from remote distances large blocks of stone, fit to form a straight lintel over a wide bearing, would render the substitution of an arch turned with bricks, or small stones, peculiarly convenient.

We may notice that tubular drain tiles were used in removing the rain water that fell through the openings in the roofs on to the pavements of the several apartments. That so obvious and simple a contrivance should have been resorted to by a people possessing great dexterity in the fabrication of fictile ware, and living in a district where the common soil of the country furnished the materials to their hand, seems so natural as scarcely to justify more than a passing remark; yet, is it not curious, that now, in the nineteenth century, and in England, a tubular draining tile is one of the most recent of novelties?

A thin stratum of bitumen is mentioned by Dr. Layard as occurring under all the floors, and passing, as he observed, under those sculptured slabs of alabaster with which the inner face of the walls was lined. He was unable to account for this, but the architect will at once perceive that this was a precaution taken to prevent the damp from arising from the earth under the pavement, and destroying the paintings, and endangering eventually the alabaster itself.

Reverting again to the representations of Assyrian castles on the slabs before us, I must not omit to call your attention to the crenellated parapets having battlements generally pointed or notched, as if to facilitate the use of the bow and arrow. Here also we find an analogous case in the friezes of the Lycian temple, discovered by Sir Charles Fellows, and now deposited in our museum. Castles are there represented with embattled parapets very similar to those in Assyria, and not unlike examples still subsisting in the east.

It has long been a subject of speculation what style of architecture characterized the first temple of Jerusalem. I think that it may be not unreasonably presumed, that the magnificent ruins now brought to light, after an interment of two or three thousand years, afford us a far better clue than any we have ever yet possessed: a much more intimate connection existed, both geographically and politically, between the inhabitants of Palestine and the people of Assyria and Babylonia, than with the Egyptians, from whom they were separated by the Arabian desert. Perhaps, too, the marbles under discussion will be admitted as evidence of an earlier civilization of art among the former people, and therefore of their greater influence in matters of taste. We have indeed the evidence of the Scriptures that Solomon sought his artists—his "cunning workmen"—in the region north of Judæa: Hiram of Tyre was his worker in metals, and his best carpenters were Sidonians.

With how deep an interest, then, these considerations seem to invest the sculptures from Nimrood! When, to use the eloquent words of Dr. Layard, we reflect that "before these wonderful forms, Ezekiel, Jonah, and others of the prophets stood, and Sennacherib bowed; that even the patriarch Abraham himself, may possibly have looked upon them,"—that works of such extraordinary interest and value should, after the lapse of thousands of years, have found their place in our national repository, is indeed a matter of just pride and congratulation, and I cannot forbear to express a confident hope that no exertion may be wanting on the part of our rulers, and of the nation generally, to second the indefatigable zeal of our countryman in securing for us a still farther accession to this most important collection.

SYDNEY SMIRKE.

THE LIGHT AND HEALTH TAXES.

THE efforts of those who desire to abolish the abominable window duty should not be relaxed. Although passed over by Sir Charles Wood, the cause is not hopeless. We have reason to believe that the Board of Health have, both before and since the Budget speech, made some very stringent representations on the subject, and we are satisfied that there *must* be a modification.

Petitions should be sent to both Houses, and no exertions spared to get rid of a tax injurious to architectural progress, health, and morals.

The report of a committee of the Metropolitan Sanitary Association, appointed to inquire into the condition of the dwellings of the poor, the causes which have led to it, &c., states,—"That the health of the people being greatly dependent on an ample supply of light and air, the window-tax has had a tendency to diminish that supply, and to cause the erection of badly lighted and imperfectly ventilated houses;"—a milk-and-watery expression on this important point, not at all likely to advance the association in the opinion of real sanitary reformers. If they would prove they are in earnest, they should forthwith send a petition to Parliament for the immediate abolition of the health and light tax.

The City Commissioners of Sewers, in reporting on Mr. Simon's reports last week, speak much more plainly and properly. They say,—"We cannot pass this subject without recording an opinion that the operation of the window-tax is directly opposed to the sanitary interests of the population of the city, and that its continuance must, in a great degree, neutralize the effect of those exertions which your hon. court is making for the purposes of sanitary improvement. We find that it affords inducements to the construction of houses with defective supply of light and air; that it opposes great obstacles to the improvement of such houses as have already been constructed on a faulty principle; and that these circumstances tend to aggravate the frequency and malignity of epidemic diseases, and to increase the mortality of the population."

Again we say, PETITION.

BRITISH ARCHÆOLOGICAL ASSOCIATION.

AT a meeting on the 27th ult., Mr. T. J. Pettigrew, V.P., in the chair, Mr. C. R. Smith exhibited various bronze ornaments, found during some excavations in Woolmer Forest, Hants. Mr. M. A. Lower exhibited an instrument in bronze, formed by the entwining of grotesque animals, which appears to have been the handle of a knife. Mr. J. Thompson exhibited a gold Roman coin of the lower empire, recently found among some earth which had been removed from the centre of the town of Leicester to the outskirts. It consists of two plates of metal, the edge of one plate overlapping the other.

Other exhibitions having been made, Mr. Cuming read a paper, on the glazed tiles of Alhambra and the east. He showed many points of resemblance between the tiles used in the Moorish buildings of the thirteenth and fourteenth centuries, and those found in Christian buildings of a later period, and he suggested that these two deadly enemies were not ashamed to borrow from each other ideas by which to ornament their religious edifices. Mr. J. Thompson forwarded an account of some interesting researches on the hitherto unknown site of the Abbey of St. Mary, near Leicester, lately undertaken by some spirited individuals in the neighbourhood. He found a large number of encaustic tiles. Sketches of one bearing the arms of the early earls of Leicester (the founders of the abbey), and another bearing a crowned head, were exhibited. This abbey was the burial-place of Cardinal Wolsey.

A communication was read from Mr. J. Rooke and Rev. W. Pattinson, describing an entrenchment near the line of the Roman wall from Wallsend to Bowness, two miles from Dykesfield, and called Fauldsteads. It consists of two enclosures, and appears to have been originally of Roman construction, but used afterwards as a refuge for flocks, &c., from the incursions of the borderers. They also forwarded a drawing of a portion of a Roman altar found in the neighbourhood. Communications were received from Mr. C. Ade, of Alfriston, detailing the discovery of a Roman road between Lewes and Pevensey Castle; and from Mr. J. G. Lowe, of St. Alban's, describing further researches near the theatre discovered at Verulamium.

CAMBRIDGE "ORDERS OF ARCHITECTURE."—A handbill notification of a pleasure excursion to Cambridge, by the Eastern Counties Railway, sets forth, that "those disposed for the trip will have afforded them the beautiful scenery and *splendid orders of architecture of that classic city*, comprising, among other views, King's College, Trinity College," and other beauties too numerous to mention within the limits of a small bill, as Sylvester Daggerwood says. If we had not the fear of our admirable friend *Punch* before our eyes, who, jealous when we fall into a joke, calls THE BUILDER his "facetious contemporary," we should venture to suggest that the writer of this handbill had heard of persons taking "orders" at Cambridge, and thought his visitors would of course expect to see what these were. He evidently had no clear understanding of what he was writing about,—and this is the point, joking apart, which leads us to note the nonsense. Strange to say, no one feels ashamed of knowing nothing about architecture.

ST. AIDAN'S COLLEGE, BIRKENHEAD.——MESSRS. WYATT AND BRANDON, ARCHITECTS.

ST. AIDAN'S COLLEGE, BIRKENHEAD.

To the mission of which St. Aidan was the most prominent member, Saxon England is indebted for the conversion of a great part of the north, before St. Augustine set foot in the island.

A site has been purchased at Birkenhead, in the immediate neighbourhood of the park, on which it is proposed to erect, "with the highest sanction in Church and State, an extensive range of buildings as a collegiate establishment, similar in character to, and devoted to the same high and holy purposes as, the time-honoured universities of Oxford and Cambridge." The want of such an institution in the north-west of England has long been felt, and the heads of the Church consider this locality well adapted to promote the success of the project. Its object is "to combine theological and general education with the pastoral care of the masses of the people, the extension of missionary exertion, and other works of Christian piety and usefulness, in accordance with the doctrines and discipline of the Church."

The college will consist of a patron, visitor, council, and board. The Liverpool Foreigners' Mission will be connected with the college. Its chaplains will be the professors of languages in the college. This mission has already accomplished the care of the German, Italian, and French sailors and residents in Liverpool. The formation of this college originated with the Rev. Joseph Baylee, A.M., the future principal. This gentleman has for several years been engaged in the formation and development of this work. Amongst the members of the committee are to be found the names of the Archbishop of Canterbury, the Marquis of Westminster, Lords Denbigh, Harrowby, Feilding, Ashley M.P., H. Cholmondely, Robert Grosvenor, M.P., the Warden of Wadham College, and the Provost of Worcester College, Oxford, the Archdeacon, and the Rector of Liverpool, &c.; the Marquis of Blandford, M.P., acting as honorary secretary.

The building, of which we give a perspective view, is intended for the reception of fifty pupils and fifty students (each having a separate study and dormitory), with power of future extension, with the necessary school-rooms, class-rooms, professors' rooms, &c. A refectory, 60 feet by 30 feet; library, 60 feet by 30 feet; museums; an infirmary; vice-principal's residence, with the necessary accommodation for matron and servants. The present group of buildings occupy a site of 250 feet by 200 feet. A chapel, connected with the college by an open cloister, is contemplated. The building is to be fronted with stone,—the moulded and dressed work with a light coloured sandstone, of fine texture, from quarries situated about four or five miles from Birkenhead, and the general face of the walls with a warm coloured sandstone, obtained in the neighbourhood, laid in random courses, and hammer-dressed.* The style adopted is the Domestic Gothic of the fifteenth and sixteenth centuries. The building is from a design by Messrs. Wyatt and Brandon, and will be carried into execution under the joint superintendence of these gentlemen and Mr. Henry Cole, architect, of Birkenhead.

ST. PAUL'S CHAPEL, ROTHERHITHE.

MODERN BRICKWORK.

In the last number of your journal you have inserted a communication, headed "Mode of doing brickwork in the Metropolis," and bearing the signature of "A Bricklayer." Permit me to interfere with *your* province, and "say something about bricklaying," in accordance with the request of your correspondent. It is this:—unless bricklayers are closely watched they will only take up sufficient mortar with the trowel to make a cross joint about one inch in depth, on the inside and outside face of a wall respectively, neglecting altogether to flush up the interior. Grouting is an imperfect and partial remedy, as it is, even if done thoroughly, only performing with thin stuff that which ought to be done with mortar of proper consistence, and is not available where a fair face is required. Let Mr. "Bricklayer" attend to this, and it will be one step in advance for him; and the only excuse I hear is—"We always do it so, Sir; we put a good *bed* of mortar, and it drops into the joints." Any one who has watched the pulling down of a wall built in the ordinary way, will know that the mortar does *not* drop so as to flush the joint, and for this cause it is that so frequently external walls require to be coated with cement to exclude the weather which penetrates them.

There is another cause which has an injurious effect upon bricklaying, but, unlike the former the remedy is not within the control of the workman. It is twofold in application—the use of an inferior material to give the appearance of more value, such as cement to represent stone, and the use of a superior material to portions of a building, conveying the idea that the whole substance is similar to that which is in sight, such as facing with bricks of a finer colour and quality than those used in the body of the work, and facing with stone ashlaring.

I will make no comment on the adoption of either of these modes, or I should run on with an essay on the advantages and disadvantages of "false appearances;" but it is certain that the stability of brickwork is injuriously affected in each case: where facing bricks are used they too often differ in size from the common bricks, so that it is difficult to make them bond well, and, as a remedy, exertions should be made by the builder to procure all his bricks of the same size, although this may not be always practicable: where the facing is of cement or stone the bricklayer becomes careless, because his work will not be visible, and therefore he loses all "pride of craft." Now that the duty is repealed there will probably be more demand for ornamental brickwork, and I have no doubt this will tend to raise up superior workmen.

As to the dispute in the County Court concerning the work at St. Paul's, Rotherhithe, I know nothing; but this I do know—that the bricks used in St. Paul's are stocks of the best quality, and that the mortar was composed of stone lime and clean sharp sand, the whole worked English bond in a very sound manner. However, as any "bricklayer," who will take the trouble to visit the building (which is situate within a stone's throw of Lavender Dock Steam-pier), may ascertain for himself what the *exterior* workmanship is, I will only remark, that all I consider requisite for *good* work will be found in this building,—the materials being of the best description, and the same throughout *all* the thicknesses of all the walls, the bond being well preserved, with cross joints well flushed up.

THE ARCHITECT OF ST. PAUL'S, ROTHERHITHE.

OVER HOURS.

Though but an uneducated mason, thinking, as I do, that the system of "over hours" is opposed to the onward progress of mankind, and thinking, as I also do, that it would be easy to abolish it, I have taken the liberty to intrude a few lines on the subject. It is well known that it is a custom in most of the building firms throughout England for the workmen, during the summer months, to work one or two hours per day "over time,"—that is, above the ten hours. There are a great many objections to this system, amongst which I will mention the following:—1. That it does not, in the end, yield any pecuniary benefit to the workmen. 2. Neither does it, in a general way, yield pecuniary benefit to the masters. 3. That it almost entirely prevents the possibility of the workmen making any progress in social, moral, and intellectual advancement. 4. That, owing to the great physical exertion required in most of the building trades, it is impossible for any man to work "over hours" without injuring his constitution. 5. That, when the physical strength of the workmen is depressed and prostrated by too long continued toil, they are, more than at any other time, inclined to seek for excitement from intoxicating liquors, and other sensual enjoyments. 6. There is a desire on the part of some of the master builders, and of their most enlightened and best workmen, to abolish the system.

Now, though there may be many men who would be able to give more weighty and more conclusive arguments why this system of "over hours" should be abolished, I cannot think that those which I have given are either unimportant or unworthy the attention of those to whom I have addressed them. It may be said that I have merely stated objections, without giving any proof of the truth of them. I think that only the two first of these objections require to be proved; the others I conceive to be self-evident. I have said that "the system does not in the end produce any pecuniary benefit to the workmen," and I account for it thus:—Suppose that in the erecting of a new church (or any other public building) there are employed, in the whole of the branches, 100 men; if these 100 men work only one hour per day each "over time," they do the work which would employ ten more men,—who, being prevented by this system from obtaining employment, are compelled to apply for parish relief or to tramp about the country. Now, then, if we take into account all the buildings and public works which go on in this country where "over hours" are made, what a great number of these tens of men shall we have who are receiving parish relief, or who are travelling in a loose and disorderly way about the country, instead of having their share of labour, and the remuneration which would follow that labour. Those employed, too, are of course sooner discharged.

Now, as regards my second objection, "that masters do not receive any pecuniary benefit," I think that it is easy to prove that they do not. The master pays the workman as much for the eleventh hour as he does for any other hour of the day; but it is impossible for any man who works at a laborious trade to do as much work in the eleventh hour as he can in any one of the others. The cause of it is this: he has already worked ten hours,—which is as long as nature designed (if not longer),—he is fatigued and weary, and wishing that it were time to leave work: this being the state of things, it is impossible that he can have as much energy and activity as he has in the preceding part of the day; therefore I think it is quite clear that "over hours" are no benefit to the masters.

And now, what is my intention in writing to you? It is to direct the attention of the builders and their workmen to the injustice and the evil effects of this system, and to call upon them to get rid of it for ever in this country, by simply giving it up.

AN OPERATIVE MASON.

ON ENTASIS OR ANT' ENTASIS.

In order for any individual fully to appreciate the importance of the methods for producing elliptical "entasis," or ant' entasis, they should be practically acquainted with the means hitherto used to produce a swell in a column, and their imperfections when applied with the greatest attention to accuracy.

Peter Nicholson enumerates seven methods for finding *points* in the profile of a column, and then applying a bent lath and drawing the curve.

But this can never produce the curve aimed at, whatever it may be, as both ends of such a line, when drawn against the lath, will be straight.

Mr. Nicholson also gives two methods for drawing a curved entasis by continuous motion,—the one for the arc of a circle, the other for a conchoidal line.

The arc of a circle, a uniform curve, is not "*æsthetically*" adapted for either a diminishing column, or a still more tapering spire,—most objectionable for the latter.

Mr. Nicholson gives the old method of producing the conchoidal line by a trammel with grooves,—which *hinders*, indeed *trammels*, rather than assists in producing a true and beautiful line, which can by more simple rulers be drawn with facility and greatest accuracy.

But this latter method becomes unmanageable on a large scale. However, by another and as simple a principle, every portion of a conchoidal line, for an entasis of any height, can be described by continuous motion most accurately.

In those enumerated by Mr. Nicholson,

* The building will be fire-proof; Messrs. Fox and Barrett's patent construction being adopted.

there is *one* intended for a line of sines, *one* an elliptical line, *two* parabolic lines, *two* arcs of circles, and *three* conchoidal lines.

Then, Mr. Penrose's researches in Greece led him to propose the "hyperbola," which has many beautiful properties Mr. Penrose can well describe; yet, although it may be the nearest possible approximation to the entasis of the Parthenon, it cannot be drawn with the facility and accuracy that either the conchoidal line or elliptical line is susceptible of; and Mr. Penrose's long and careful investigations enabled him at once to appreciate the elliptical method, when I pointed it out to him; and in actual practice he will be able, I doubt not, to value it still more.

The conchoidal principle of finding points in the curve and drawing against a bent lath, was followed at the British Museum; and it would be interesting to know what it cost to prepare and keep the rules moderately in approximate order, during the progress of the works.

It is, perhaps, not to be wondered at that architects, who have not seen *true* lines of delicate curvature of distinctly different characters, have not been able to appreciate them as they deserve. If, however, any architect who doubts the æsthetic effect of such delicate variation, would *once* make the attempt on a good-sized scale, and produce accurately a drawing of a single column with flutes, either with elliptical or conchoidal entasis, the instruction his eyes would thus receive would enable him to distinguish and appreciate the most delicate *true* curvature, when appropriately applied.

After having produced such an example, if he still doubts, let him substitute a right line, or any other curved line, for one of the lines representing the flutes. J. JOPLING.

GREENWICH BATHS AND WASH-HOUSES.

THE style of the design by Mr. Ritchie, selected by the committee, is that of the time of James, and was set forth in a pretty perspective view, which doubtless helped the plan. The arrangement of the plan, which is supposed to admit of one money-taker sufficing for the whole establishment, weighed greatly with the committee,—more, we think, than it will justify in practice. We cannot suppose that this design will be carried out for the sum stipulated, 5,000*l.*

A set marked *Pro Bono Publico*, Italian in style, seemed to us well arranged, and with a satisfactory aspect of completeness. A design marked *Pro Grege a Lege*, presented the peculiarity of circular washhouses, the tubs placed around the enclosing wall, the partitions radiating.

One set of plans marked F. F. were withdrawn by their author before the exhibition; these were evidently the work of one acquainted with the subject.

Mr. W. Smith, of Greenwich, not being a competitor, was called in to assist in the selection, but we do not hear that his recommendation was adopted.

REVIVAL OF OBSOLETE PARTS IN NEW CHURCHES.

YOUR pages lately stated that a new church in the diocese of Gloucester and Bristol was about to be consecrated by the bishop of that see, and that the church contained a piscina, &c., applicable only to the Roman Catholic service. Now in the restoration of our old churches these obsolete parts might well be omitted, but in the construction of a *new* church it approaches to a superstitious admiration of the ceremonies of another church, and I fear with some it shows a desire for the return of such services. It is not for me (a humble churchman) to point out to our hierarchy their duties, but I do suggest that some respect should be paid to us Protestants by confining the construction of our churches to the requirements only of Protestants. I am further led to make this remark by the comments made by Mr. Pugin on "J. F.'s" communication. "J. F." referred to our parish churches. Mr. Pugin's remarks are more applicable to those for celebrating the Roman Catholic religion, as I conjecture, that had he meant to refer to those for the Protestant, he would not have expatiated so much on the visible symbols of a religion which, to be practised aright, requires no such adjuncts. I fear that if these very zealous effusions are further indulged in, we shall have the elevation of the rood in our churches advocated, merely because it existed formerly; we have already the screen introduced, although I am unaware of the necessity of dividing the chancel from the body of the church; as minister and congregation should be as one in assembling themselves together, to join in the worship of God. W. B.

THE SELECTED PLANS FOR THE DRAINAGE OF THE METROPOLIS.

I HAVE found you so kindly considerate of desert, that I am induced to request you to use your influence to secure for those competitors who were honourably signalized and mentioned in the recent report of the Commissioners of Sewers some *substantial* memento of the fact. There were five designs distinguished by special approval. Of these five, two (the 4th and 5th) were the proposals of Messrs. Phillips and Austin, who were officers of the Sewers Commission, and *in receipt of salaries* at the time of the competition. I think you will consider that Mr. M'Clean and the other two competitors,—who, it is evident from the terms of the commissioners' remarks, gave considerable attention to the subject,—should receive some pecuniary reward, or a medal, or some other tangible proof by which they may feel themselves paid for the time they devoted to the matter. This would only place them in the same position as Messrs. Phillips and Austin, who were receiving the public money. Any further mark of approval the commissioners may think due both to the first and second class of competitors, of course would be gratefully received, but it is quite clear that something more is due to Mr. M'Clean and those gentlemen who stood *before* the officers of the commission. C. E.

*** We supposed it fully understood that the authors of the selected plans would be rewarded: that they should be there can be no question.

NOTES IN THE PROVINCES.

To the restoration or rebuilding of Halstead Church, now rapidly rising from its old ruins into a new state of existence, has been added the tower, which it has been found absolutely necessary to pull down and re-erect. The means are being collected, and the work of demolition is in progress.——The restoration of St. Peter's, Northampton, according to the local *Herald*, is now likely to be begun forthwith on the plans proposed, doubling the accommodation: 600*l.* are still wanted for the interior work.——At a meeting of the Leicester Board of Guardians the following tenders were accepted for the new workhouse:— Smith, bricklayer, &c., 10,967*l.*; Lindley and Firn, stonemasons, 1,148*l.*; Richards, ironfounder, 2,940*l.*; Catlin, plumber and glazier, 1,635*l.*; Hitchcock, painter, 136*l.* Total, 19,911*l.* Old materials, estimated by Mr. Parsons at 3,500*l.* —— The Leicester lodging-houses of the lowest class have recently undergone great improvement, under the bye-laws of the local board of health, and fever, in consequence, has been banished for several months. ——The erection of a new church at Swindon is to be immediately commenced. —— The Cardiff council have resolved, says *Felix Farley*, to complete the front of the new town-hall, on the original plan of Mr. H. Jones, architect. ——A monument of Carrara marble, laid on a Galway black marble basis, has been put up in Heaton Chapel, to the memory of a Mr. Travis, schoolmaster at Heaton Norris for more than forty years. It is in the Pointed style, and was wrought by Mr. Latham, of Stockport.——In less than a month the Sunderland new docks will be ready for occupation. A sailor's home and Bethel chapel are to be erected close by.——It is proposed to erect a suitable building at Haltwhistle, for the Mechanic's Institution there.——The contract for Sir John Barrow's monument on the Hill of Hoad, Ulverstone, has been let to Messrs. Brocklebanks, who have commenced the work.——John Knox's house at Edinburgh having been thoroughly repaired, all legal proceedings for its removal have been stayed.——At the Liver Theatre, in Liverpool, which is to be opened in May as a ladies' drapery, &c., establishment! the front is to have plate-glass in the windows of the three stories, each square in the ground story being 13 feet by 5 feet, in one piece. The architect in charge of the alterations is Mr. Gribbon, formerly of Mr. Donaldson's office.

THE "PROVIDENT INSTITUTION OF BUILDERS' FOREMEN."

ANNIVERSARY MEETING.

THE foremen who are members and supporters of this benevolent society for giving "relief to aged and infirm members and their widows and orphans," met in the large room of the London Tavern, on Wednesday evening, in convivial union with their employers and patrons,—amongst a goodly number of whom, around the Chairman, Mr. William Cubitt, M.P., and the Vice-Chairman, Mr. Lee, were Professor Cockerell, Mr. George Rennie, Mr. Kendall, Mr. Donthorne, Mr. Samuel Pocock, Mr. Barnett, Mr. Haward, Mr. Piper, Mr. T. Piper, Mr. Glenn, Mr. Trego, Mr. Davison, Mr. Clark, Mr. Nicholson, Mr. Greaves, Mr. Nye, Mr. Cooper, &c., &c. In all, probably upwards of 150 gentlemen sat down to a substantial dinner and its accompaniments; after doing justice to which, and expending a little of the rich fund of loyalty and constitutional principle with which one and all appeared to be endued, the chairman gave the toast of the evening, 'a bumper,' as the toast-master of course insisted on its being, and reviewed the progress of the institution from its tender infancy, when its friends in need were friends indeed, to the present time, when it appeared to be so well supported, that he had to congratulate the members on their prospects. There were probably upwards of 1,000 builders' foremen in the metropolis, and the first object of this institution was to bring these into communication for their mutual benefit. This they desired to do, however, with careful inquiry into the character and capabilities of the candidates, so that the admitted members might do credit to the institution, which, on the other hand, was to be ever after solicitous to aid him in his employment, in his physical infirmities, in his old age, and in the persons of his widow and his orphans after his death. Some of the class to which this institution belonged, being in good employment, and provident, would provide themselves for these contingencies, and not require assistance from such an institution, but all were not so highly favoured, and builders' foremen, like other men, were liable, and even more likely in some respects than many, to become disabled, as well as like other men to become old: to lend a helping hand to such as these, who required its aid, was the laudable object of this benevolent society, to support and countenance which they had all there met.

The Secretary, Mr. W. Allard, then read the annual report, with an appeal to architects and builders for counsel and assistance. From this report it appeared that the society had already begun its good offices in administering succour to afflicted members, but the balance sheet showed investments of several sums, amounting in all to upwards of 300*l.*——Meantime subscription lists were rapidly filling up along the lines of table, including not a few single contributions of ten, fifteen, and twenty guineas, besides numerous donations of five and downwards; and in a short time, while the lists were still imperfect, the Chairman announced an addition to the funds of 218*l.* odds.

At the close of the report the Chairman, in an able and appropriate address, did honour in the name of the builders and foremen to the architectural and engineering professions in general, and to Professor Cockerell and Mr. George Rennie, as distinguished members respectively of these professions. To these two professions, he said, builders and builders' foremen were constantly looking up with respect and pleasure, and for instruction and support, and they felt proud to see at that table such representatives of these professions as were then present. He drew the distinction between the works of the architect and engineer, that those of the former were the production of art, with the aid of science; those of the latter were the work of science embellished by art.

Mr. Cockerell responded. His friend and he, as well as the other members of their professions present, had great pleasure in associating thus with the

builders and their foremen. By such association prejudices were removed, an excellent and mutual understanding insured, and all connected with the building trades might be led to become indeed one people—one community. Such was the laudable and noble spirit of our times in general, and to the honour of Prince Albert be it said, that this spirit of true union and sympathy had been so warmly taken up by him. Let them lay aside class interests and become one family of labourers, living by the sweat of their brows, as they all did: and the bread of industry was as sweet at the workshop bench as on the prince's table. He was certain nothing was nearer to the hearts of those around him than to see an institution like this in a flourishing state. The professor then paid a merited compliment to the chairman, Mr. W. Cubitt, pointing to him as an example of that elevation of position and respect in high places, attainable in this country by honourable industry and integrity.

Mr. Rennie also addressed the meeting in a like spirit with Mr. Cockerell. He would fain hope to see an end to all isolation, and the establishment of an intimate amalgamation and union of masters, foremen, and operatives.

The meeting was afterwards addressed by Mr. Thomas Piper, who responded, in an excellent speech, on the part of "the builders," to a toast proposed by Mr. Cockerell. We are most anxious, said he, to give you (the foremen), as far as possible, the benefit, not only of our counsel and advice, but of our purses too. We sympathize with you in all your efforts to provide for yourselves. But our co-operation depends on the manner in which you yourselves enter on a provident course. Come forward, do something for yourselves, and we will also do all we can for you. I have often said behind your backs what I now state to your faces. No class in this metropolis is entitled to more respect than builders' foremen. The great object of our meeting to night is an amalgamation of classes. We are all elements of a common system. I trust the kindly feelings now being elicited, will continue, and that we shall have opportunity to state, face to face, what we feel from day to day, and hour to hour. Let me remind you once more that we are ready to help, but that the matter rests in your own hand, and depends upon your own union:—Yes, this *is* a union that is a right one—a union of citizen with citizen, of Christian with Christian, of Briton with Briton.

The Chairman, in replying to his own "health," said, the builder's foreman held an important position between the builder and the workmen on the one hand, and the architect and the employer of all on the other. Great tact and discretion were required in the exercise of his duties to enable him to draw the line of justice and duty to all. As for the contractor, he intrusts his foreman with his honour; for if his work be bad the master loses his position in society and in trade. The foreman who possesses a thorough good understanding of his business is a man of no ordinary character, and entitled to no ordinary approbation. The chairman then gave as a toast, the honorary stewards and honorary members, coupled with the name of

Mr. Taylor, who, in responding, said he had predicted, after the meeting of last year, the success which would follow. All now seemed to unite in the desire to promote so good a cause. The vice-president of the present meeting, Mr. Henry Lee, he had some reason to believe, would be their next chairman, supported, perhaps, by Mr. Piper.

Mr. Lee's health was then proposed, by the chairman, and responded to by Mr. Lee, who in turn agreed to preside, and proposed "The Governors and Officers of the Institution," to which Mr. Joseph Kay, foreman, sensibly responded.

The Chairman then proposed with eulogy, "Success to 'THE BUILDER,'" coupled with the name of Mr. Godwin, to whom, he was good enough to say, he thought the institution owed something.

Mr. Godwin, in replying, made some observations in disproof of erroneous notions touching capital and machinery; and the meeting soon afterwards broke up.*

THE LATE DR. POTTS.—The inventor of the hydraulic pile driving process, and other mechanical inventions, expired at his house in Buckingham-street, Strand, on 23rd ult. Dr. Potts belonged originally to the medical profession, but, by inclination, even from school-boy days, and while a class-fellow with the present Premier and the Duke of Bedford, he appears to have devoted himself to mechanical and engineering pursuits. His name, however, will be most closely associated for the future with the ingenious process for driving piles, to the progress of which we have occasionally referred, especially in a leading article in a late volume of THE BUILDER.

* We will not omit to record the liberality of the proprietors of the London Tavern, Messrs. Bathe and Co., who, at the close of the meeting, presented a donation of ten guineas to the funds of the institution.

Books.

The Annal of Scientific Discovery; or, Year-Book of Facts in Science and Art. With Lists of Publications, Patents, Papers in Scientific Journals, &c. Edited by D. A. WELLS, of the Lawrence Scientific School, Cambridge, and G. BLISS, Jun. Boston. Gould, Kendall, and Lincoln, Washington-street. 1850.

MR. TIMBS will doubtless be pleased to find his "Year-Book of Facts" now the parent or prototype of a worthy and valuable trans-atlantic perennial which has just sprung up at Boston, U. S. Though honourably admitted to be based on it as its exemplar, this is by no means a copy, and indeed, though also a compilation of the new facts of the year, there is much difference in detail, with a few peculiarities on the part of the American work, such as the admission of some original matter, or details not previously printed, and the re-arrangement or narration of others in the words of the editors themselves. But were we asked to decide which of these concurrent year-books is the best, we could only reply, perhaps, with strict propriety and conscientiousness, that *both are best*. There is more foreign matter in the Boston book, more British in its prototype: both, be it noted, quote THE BUILDER, though, as might be expected, in the latter only amongst the multiplicity of other "foreign" works, and therefore to but a small extent. The work under notice is typographically and otherwise well got up, and quite in the English style.

Chambers's Papers for the People. Vol. I. Edinburgh. W. and R. Chambers. 1850.

THE Chamberses are a singular compound of enterprise and prudence: they seldom or never fail in a sagacious calculation of the wants of "the people," and a prompt and successful administration to these wants. We only hope that, in the present instance, they have not over-estimated the maturity and richness of the mental soil in which they now are busy sowing these fruitful seeds of suggestion and improvement. "The People," however, is a most comprehensive title, albeit a somewhat heterogeneous one; and doubtless it comprises thousands—tens of thousands—by whom such *pabulum* will be appreciated. Having an eye to the junior class of our own more select readers, we may direct their attention to an interesting collaboration of the main features of the contributions of antiquaries, archæologists, and tourists, on "The Sepulchres of Etruria." This little volume is very showily got up in polished ornamental bordered boards, so that "The People" would require to have clean fingers for its perusal: all—even this—however, will tend, not a doubt of it, to transmute "the great unwashed" into "the great washed," a consummation itself devoutly to be wished, for cleanliness is next to godliness in human nature.

Electric Telegraph Manipulation. By C. V. WALKER, Superintendent of the South-Eastern Railway Telegraphs. Illustrated. London: Knight and Sons, Foster-lane.

So far as we are competent to judge, this little pamphlet appears to embody all that is necessary to enable any tyro to handle the electric ganglia and nerve-conductors of the country, and certainly much that is interesting to all, whether with such an object or not.

DESTRUCTION AT ST. BARTHOLOMEW'S, SMITHFIELD.—Permit me to direct the immediate attention of all lovers of mediæval art to the remains of a cloister appertaining to the Church of St. Bartholomew the Great, West Smithfield, built by Rahere,—the last few vestiges of which are gradually disappearing. The very ornamental and elaborate stone bosses have been sold, and encaustic tiles given away, and the remainder of the former are being transformed into stone bases for the modern barbarian. I question the right of the party thus dealing with the sacred relics of this priory; and I think it is to be deeply deplored that links like these—and there are not too many—should be scattered abroad, and before even drawings are made of them.

W. P. GRIFFITH.

Miscellanea.

INSTITUTION OF CIVIL ENGINEERS.—On Tuesday, April 2, the discussion upon Mr. Thorneycroft's paper "On the Manufacture of Malleable Iron, and the Strength of Railway Axles," was renewed. The paper read was a "Description of a Lift Bridge, erected over the Grand Surrey Canal, on the line of the Thames Junction Branch of the London, Brighton, and South Coast Railway," by Mr. R. J. Hood. This consisted simply of a rectangular platform, 23½ feet in width, and 35 feet in length, carrying on one side a line of rails, and on the other side a roadway for carts; it was formed of four beams of oak timber, undertrussed with wrought-iron rods and cast-iron saddles, those for carrying the rails (which were bridge-shaped) being stronger than the others, and having a flooring of three-inch planking: the platform rested, when down, upon piles driven into a bed of hard gravel, met with at a depth of about twenty feet below the water line. The platform, which was about 12¾ tons in weight, was suspended at the four corners, by galvanized wire ropes, 4 inches in circumference, attached to the end of each oak transome, by means of strong bow springs, and passing over pulleys, fixed on four pairs of cast-iron standards, also supported on piles, and fastened at the other end to drums, 3 feet in diameter, each pair of which were keyed on to the same horizontal shaft, situated a few inches under the rail and road level. Upon the same shafts there were also fixed six other drums, of a like diameter with the former, carrying, upon coils of wire rope, 2⅝ inches in circumference, balance weights, of a total weight of 12½ tons, but not equally distributed, intended to assist in raising the platform, and which descended in cast-iron cylinders, or wells. Motion was given to one end of each shaft, by means of simple hand-gearing, consisting of a train of wheels and pinions, by which the power was multiplied twenty-six times.

THE IRON TRADE, &C.—At the preliminary quarter meeting of the South Staffordshire trade, held on Thursday in last week, it has been resolved, notwithstanding some misgiving and much despondency, *not* to further reduce the nominal rates, as some had resigned themselves to do. The trade was quite inactive, and without the slightest prospect of a rise; but it is the opinion of parties interested in the sustainment of prices, that the resolution come to "will be faithfully adhered to during the ensuing meetings, since, though it would be rather difficult to reduce these prices to definite figures, they have already been modified to meet the peculiar circumstances of individual firms."——The steel trade and Sheffield trades generally are said to be progressing towards a condition of fair employment and wages, as well as fair return of profits. There is now, beyond those employed at this time last year, an increase of hands at work in Sheffield of

595	in the file trade, in all its branches,	
98	,,	saw trade,
182	,,	table-knife trade,
77	,,	edge-tool trade,
93	,,	spring knife trade,
510	,,	various other trades.
1,555		

—At the meeting of the Iron, Hardware, and Metal Trades' Pension Society, held on Wednesday in last week, it appeared in the report that the balance in hand in 1848 was 37*l.* 11s. 9d., and that the receipts were, during the year, 1,255*l.* 9s. 10d.; expenditure, 1,122*l.* 7s. 2d. Viscount Lewisham, M.P., has consented to take the chair at the annual meeting to be held in course of the present month.

STONE-PAPER, OR FIRE-PROOF THATCH.—Messrs. Ebart, paper-manufacturers at Neustadt, Elberswold, are said to have recently invented an incombustible cartridge-paper for roofing, which is neither fragile nor expensive. The Royal Commission on Buildings have tested its properties, it seems, and reported it as both impermeable and fire-proof.

CITY IMPROVEMENTS.—The site of the Cross Keys Hotel, in Gracechurch-street—pointed to by a correspondent not long since as offering opportunity for improvement—is advertised for sale, we observe, on the 11th instant.

PROJECTED WORKS.—Advertisements have been issued for tenders, by 1st May, for the erection of a church at Gravesend; by 11th April, for the enlargement of a portion of the Central London District School, Westow-hill, Norwood; by 16th, for sundry repairs and alterations to four or five cottages at Claygate, Esher; by 16th, for painting, cleaning, and repairing houses at Hackney for the Islington Cattle Market Company; by 17th, for iron roofing for the London station of the Great Northern Railway; by 16th, for putting down about 3,900 feet of new pavement, and about 900 feet of kerb, at Romsey; by a date not specified, for the building of a bridge over the river Waver, near Wigton; by 8th, for the erection of a new school-room at Wellingborough; and by 10th, for making a new road from Blisworth station to join the road from Blisworth Arm to Gayton.

BRIDLINGTON CHURCH WINDOW.—The west window of this edifice, which Mr. Wailes, who should know something of windows, distinguishes as "the largest and finest perpendicular window that has been put up in England for the last 300 years," has been restored from its unsightly mass of rude masonry, and filled with stained glass, on a design supplied and executed by Mr. Wailes. The entire height of the window is 55 feet, and the width 29 feet below the transome, and 31 feet above. The nine large openings under the tracery and above the transome are each 15½ feet high, and of proportionate width, and are filled in with full-length figures as large as life, in niches, surmounted by crocketed canopies. The centre figure is that of the Saviour, holding a globe and cross. The others are the four Evangelists, St. Paul and St. Peter, the Virgin Mary with lilies, and the Lamb. The openings below the transome are each 12½ feet high and 2½ feet wide. The centre contains the figure of St. Thomas with spear. The others are decorated with angels, alternating with flowered quarries, each with a separate lily, in allusion to the dedication of the church to the Virgin Mary. The chief openings in the tracery are filled in with such symbols as the crown of thorns, spear, nails, and sponge, and the secondary and subordinate openings with angel-figures, pelican, I.H.S., &c.

A NEW OVEN.—We yesterday saw tested a new oven invented by Mr. M. Fitch, which, for despatch and economy of fuel, will be deemed a godsend by all good housewives. The furnace is a circular fire cylinder of 8½ inches diameter; the fire divides at the lower end right and left into two cylinders of 6 inches diameter, and the heat ascends at each angle of the front of the oven, and enters two deflectors, which it traverses backwards and forwards, so as to secure equal heat all over the oven. Beneath the furnace is another oven for cooking joints. We saw a bushel of bread beautifully baked, and four shoulders of mutton cooked at an expenditure of 8½ lbs. of coals, which is a fraction less than 1d.: after the heat is thus got up, the same could be done for ½d., and the oven kept in operation all day for about 3½d. or 4d.—*Chelmsford Chronicle.*

MONUMENT AT RUNNYMEDE.—It appears surprising in a country like this that there should be no memorial, not even an inscription, to mark the spot at Runnymede where the Magna Charta of every Englishman's rights received the sign-manual of King John, in the twelfth century, through the firmness of the Barons. The site at present is occupied as a race-course, with an unsightly stand in the centre. Surely this might, and ought to be, removed, and an ornamental and appropriate monument or memorial be executed to commemorate the event, which might be made useful, at the same time, without interfering with the amusement of the race-course. I really think the county and the public should take some interest in such an undertaking.—W.

RAILWAY THROUGH THE ALPS.—M. Maus, the Sardinian engineer, has published his report on the gigantic operation of boring through the Alps in constructing the railway from Chambery to Turin. The tunnel will be finished in five years, and the expense, including the laying down of a double line of rails, will, according to his estimate, amount to 13,000,000 francs. The French engineers calculated the cost of boring the Saint Irénée mountain at 24,000,000 francs.

BUILDERS' TENDERS.—We have before us complaints from builders in five different cases, as to the non-acceptance by committees of the lowest tender for works required to be done, and in one instance of refusing to take any of those sent in, although made by responsible men, and below in amount their own architect's estimate. In all these cases, however, the committees had specially reserved to themselves the right to refuse the lowest tender, and the builders went into the matter with their eyes open. We would, however, impress on parties who obtain tenders the fact, that estimates cost time and money, and that this should be remembered in coming to a decision. If the lowest tender be a fair one, made *bonâ fide* by a respectable party, it ought in justice to be accepted.

USE THE MEANS THAT ARE AT HAND.—Some artists, says a writer in the *Athenæum*, have failed for want of a good angel, to whisper to them in the midst of their vague and colossal aspirations to do some great thing in Art, that greatness can prove itself such by concession more surely than by defiance. Out of no more genial task than the patching of plays to suit playhouse audiences did Shakspeare secure for himself an eternal reputation. The agonizers, who must needs have worlds, publics, patrons, called up expressly to welcome them—and who, failing such miracle, break their hearts in despair—are, after all, but like a pigmy who has crept into a giant's armour, and who, finding that he can move the limbs of the figure with some semblance of living will and action, fancies himself a giant also.—This is worth thinking over.

PROTECTION OF INVENTIONS AT THE 1851 EXHIBITION.—The paper on "Cheapening Patents," in your last number, is a step towards agitating this question,—at least, I hope so. Perhaps you will be humane enough, also, for the sake of the humble workman—I repudiate the term poor—to throw out a hint to the prime movers of the intended exhibition in 1851, as to the absolute necessity of publishing what sort of protection they intend to hold out to inventors who are minus the means to protect themselves with 120*l.* patents—and whose anxiety is immense—to exhibit their inventions to the discerning world. I know three, who, with your humble servant, all Englishmen! have dared to exercise some ingenuity respecting machinery connected with manufactures, and articles of domestic use. But, Sir, one of the perfections of human reason!—*i. e.*, the patent law—forbids us to be too communicative to each other, and, consequently, with everybody else, having very naturally a terror of the black flag before our eyes,—for of what avail are small craft against the well-equipped pirates who so abound in a trading community. How are inventors and improvers, without a shot in the locker, to steer in 1851? Might not many a good and useful thing (even though it were only suggestive of something better) be still kept in darkness for want of paternal security when realized before the public eye?—AN INVENTOR OF WAYS, WITHOUT MEANS.

THE BIRMINGHAM EXPOSITION OF 1849.—The *Art-Journal* for April says,—"The final statement of the expenditure and receipts for the fifteen weeks during which this Exposition was open to the public has been supplied to us; and we lay it at once before our readers, inasmuch as it is a curious and instructive paper, particularly when considered in reference to the projected Exposition of 1851:—

Money realized by season tickets, single admissions, and sale of catalogues				£3,076	14	0
Cost of building and fitting up	£1,258	18	8			
Gas consumed and gas fittings	231	13	11			
Fire insurance on 23,000*l.* for 6 months	128	14	8			
Printing, advertising, and catalogues	493	18	7			
Carriage of goods from distant contributors	45	0	0			
Attendants	482	13	5			
Incidental expenses, superintendent's salary, &c.	325	11	8			
				2,966	10	11
Balance				£110	3	1

GAS-LIGHT IN DWELLINGS.—This desirable system, the extensive adoption of which, together with liberal reductions of price and strict purity in the manufacture, we have long advocated, is one certain to promote the interests of companies immensely, while providing a truly lightsome and attractive home to cheer and encourage the people in the path of duty. We are gratified to observe that the importance of it is now being urged at Manchester, where a lecture was lately delivered at the Royal Institution, by Mr. D. Stone, one of whose objects was to urge its adoption. The local *Spectator* also has taken up the subject with a leading article, in an excellent spirit, on "Gas in Dwellings." In the lecture alluded to, the facilities which gas-light affords for the more proper ventilation of dwellings, and hence for the further promotion of a cheerful spirit and health in the homes of the poorer classes, were also pointed out. The chairman of the Manchester Gas Committee itself was in the chair, and, after the lecture, gave expression to an idea that has often struck us, namely, that though only a small per-centage of the composition of coal be yet applicable to the manufacture of gas, the remaining elements may yet also be converted to illuminating as well as to other purposes. The hydro-carbon gas was then adverted to, and it was remarked that the limit of attainable quantity in such substances as resin alone would ever prevent their general substitution for coal in the manufacture of gas. The chairman declared, moreover, that he could not credit the statements made as to the enormous quantities of gas which Mr. White professed to be able to extract from resin.——At the Manchester gas-works the quantity of gas made in 1849 was 379,455,600 cubic feet. The smallest day consumption was 306,000 cubic feet, and the largest 2,522,000 cubic feet. The greatest day consumption of cannel was 215 tons.

A NEW LOCK.—Mr. Edwin Cotterill, of Birmingham, has invented a lock, patented as the detector lock, the security of which is alleged to consist in the peculiar formation of the wards, and a radial spring operated on by a key so cut and adapted as to press unequally on the spring. The nicety observed in the cutting is said to render it impossible even for the maker to reproduce a key precisely to fit the same lock: the security consists in the impossibility of knowing where the pressure takes place, the key being of the most eccentric form, and the lock, in fact, made to fit the key, not the key to fit the lock. The variations are said to be on the scale of the millionth part of an inch. A key apparently precisely like the true one will throw out a spring called the "detector," which not only makes all the parts fast against the false key, but renders it necessary that a peculiar backward movement be made with the true key before the lock can be opened, and hence the title of "detector." Another security is afforded by the formation of the key preventing its being cast.

ST. MARTIN'S CHURCH, BIRMINGHAM.—The employment of Mr. Hardwick to furnish plans and estimates, in accordance with his recommendation to restore this church and rebuild the spire, appears to have given offence to resident architects, who regard it as an insult offered to the local talent of a town which has already proved itself capable of contributing to architectural progress.

NORTH LONDON SCHOOL OF DRAWING.—A public meeting in aid of this school is to be held, it will be seen, on Tuesday evening next, at the School-room in Southampton-street, Euston-square. We hope it will be well attended.

TENDERS

For the Grand Stand at Bedford. Mr. James Horseford, architect; opened 15th March.

Parker (of Thrapston)	£1,169
M. Hill and Son (London)	1,150
Joy (Bedford)	1,027
Cobb and Masters	999

MEETINGS OF SCIENTIFIC BODIES

To be held during the ensuing week.

MONDAY, April 8.—Institute of Architects, 8 p.m.

TUESDAY, April 9.—Institution of Civil Engineers, 8 p.m.

WEDNESDAY, April 10.—British Archæological Association, 8½ p.m.

THURSDAY, April 11.—Royal Society, 8½ p.m.; Society of Antiquaries, 8 p.m.

TO CORRESPONDENTS.

"J. L.," Richmond (under our mark), "H. E. M.," "St. John's Wood," "W. G. H.," "J. R.," "W. B.," "P. M. H." (declined with thanks), "Z. W. D.," "W. H.," "Agrestis," "W. W.," "J. G.," Edinburgh (glad to hear of him), "J. B. D.," "J. L. W." (we are forced to decline advising), "G. G. S." (too late for consideration this week), "A Constant Reader," "W. L.," "J. C.," "H.," "A. P., Denbighshire (we can scarcely believe that our informant *invented* the story), "C. J. N." (shall appear), "W. A.," "C. B. A.," "J. N. M.," "E. L. G." "Churches of the Middle Ages," Part 6; Tate's "Experimental Chemistry" (Longman and Co.); "A Plea for the Restoration of our Ancient Churches," by G. G. Scott (J. H. Parker).

"Books and Addresses."—We have not time to point out books or find addresses.

NOTICE.—All communications respecting *advertisements* should be addressed to the "Publisher," and not to the "Editor:" all other communications should be addressed to the EDITOR, and *not* to the Publisher.

ADVERTISEMENTS.

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Poultry	0*s.* 8*d.*	Best Grey Goose	1*s.* 10*d*
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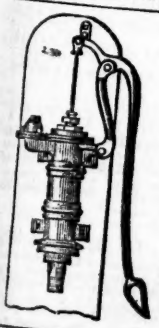

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IRON ROOFING WORKS,
BIRMINGHAM, late of Southwark.
Office,—3A, MANSION-HOUSE-PLACE, LONDON.
JOHN H. PORTER,
PATENTEE
Of the Corrugated Iron Beams, Girders, and Fire-proof Floors;
MANUFACTURER OF IRON ROOFS AND BUILDINGS,
Chiefly of
THE PATENT GALVANIZED IRON.
This material has been employed by J. H. PORTER for several years past in the construction of Iron Roofing for RAILWAY STATIONS and DOCKYARDS, at home and abroad; FARM BUILDINGS, FACTORIES, GASWORKS, WAREHOUSES, &c.; SUGAR-HOUSES, MEGASS and COFFEE-SHEDS, STORES, DWELLINGS, and MARKET-PLACES, in the East and West Indies, China, at the Cape of Good Hope, and in other parts of the world; Iron-bar and Strained-wire Fences, Sheep and Cattle Hurdles.

A. WHYTOCK, 494, New Oxford-street, London, begs most respectfully to inform Builders and the public, that he has removed to the premises as above, where he has on sale a complete variety of BATHS, all manufactured of Morewood and Rogers's Patent Galvanized Tinned Iron. The accompanying sketch represents a Plunging, a Shower, and Springing Bath combined, which A. W. has secured by registration.

It costs no more than the old-fashioned Shower Bath, while from its simplicity it is free from liability of getting out of order.
A. W. continues to supply
PLAIN AND CORRUGATED ROOFING;
and Houses made of the Patent Metal, or,
CALIFORNIA AND THE COLONIES.
WORKS, 5, QUICK-SET-ROW, NEW-ROAD.

TO ARCHITECTS AND BUILDERS.

CHUBB'S WROUGHT-IRON and FIRE-PROOF DOORS and FRAMES, for strong Rooms. A large stock of the above, of all sizes, made in the best manner, and of different strengths, fitted with CHUBB'S PATENT DETECTOR LOCKS, throwing from two to twenty bolts, constantly on sale, at very moderate prices. FIRE-PROOF SAFES of every size, and Patent Detector Locks and Latches for all purposes.—C. CHUBB and SON, sole Manufacturers, 57, St. Paul's Churchyard, London.

STEVENS and SON, GAS ENGINEERS, IRON and BRASS FOUNDERS, and CONTRACTORS for the ERECTION of GAS WORKS, inclusive of APPARATUS, of every description, for the MANUFACTURE of GAS, and the FITTINGS of from 20 to 20,000 LIGHTS, whether for public or private use. Established in 1815. Manufacturers of station-meters and governors; and consumers' gas-meters, of the most approved construction. Cast-iron mains supplied and laid for gas or water; street-lamp posts, brackets, and bronze, copper, iron, or tin lanthorns. Tanks and liquor backs, of any dimensions, in cast-iron or galvanized wrought-iron, constructed and erected. The patent semaphore railway signals; and railway lamps, for stations, engines, carriages, signalmen, &c. Registering turnstiles, for bridges, piers, baths, public gardens, &c. Architectural designs carved in wood, or modelled in wax or composition, by artists on the premises, and cast in bronze, brass, iron, &c. And drawings, plans, and specifications submitted.—Address, STEVENS and SON, Darlington Works, 19, Southwark-bridge-road, London.

CAST-IRON PIPES, IRON WORK FOR OVENS, &c.

RAIN PIPES, &c.—F. A. TIDDEMAN, 8, St. Ann's Wharf, Earl-street, City, near Blackfriars-bridge, keeps a large stock of Rain Pipes, Heads, Shoes, Elbows, &c., half round and O. G. Gutters, Socket Pipes for Water or Gas, Flanch Pipes, Sash Weights, and other Castings; Iron Work for Bakers' Ovens of every description, fitted complete, to be had in sets or in parts.—Prices equal to all competition. Contracts taken to any extent. Goods landed. A powerful crane.

TO BUILDERS and CARPENTERS.—
Elliptic Stoves, double backs, 2½d. per inch.
Register Stoves, 6d. 6½d. 7½d. per inch.
Self-acting Ranges, with Circular Ovens and Back Boilers, best wrought bars and bright fittings—
3 ft., 3l. 18s. 3 ft. 6 in., 3l. 7s. 4 ft., 3l. 15s.
3-feet Cottage Ranges, with Oven and Back-Boiler, 35s. each.
3-feet self-acting ditto ditto, 30s. each.
Air Bricks, 3s. 6d. per doz. Sash weights, 5s. per cwt.

Best Patent Cut Clasp.					
4½d.	5d.	7d.	10d.	1s. 2d.	1s. 8d. per 1,000
3d.	4d.	6d.	8d.	10d.	20d.

Best Sheet Floor Brads, 12s. per cwt.
Best Town Glue 38s. Do. Scotch, 52s. per cwt.

Best Patent Sash Line.					
1	2	3	4	5	6
4s.	4s. 6d.	5s. 6d.	7s.	8s.	10s. 6d. per gross.

At F. R. WILLIAMSON'S IRONMONGERY and STOVE WAREHOUSE, 35, Chiswell-street, Finsbury-square.
Lists of Prices had on application at the Warehouse, or by letter pre-paid, inclosing postage stamp.—Warehouse closes at 7 o'clock.

CLARK'S IRONMONGERY, STOVE, RANGE, and METAL WAREHOUSE, 159, Shoreditch.
Strong Elliptic Stoves, with extra back, 2½d per inch. Register Stoves, 5d. per inch.
Three-feet Self-acting Cottage Ranges, 36s. each. Best Self-acting with Wrought Bars and Bright Fittings, 58s. each.
Cast Rain-water Pipe.

9d.	11d.	1s. 1d. per yard.	
2	2½	3 inch.	

Gutters, 4 inch, 9d. per yard.
Best Cut Clasp and Rose.

13s.	14s. 6d.	14s.	13s.	12s. 6d. cwt.
1½	1½	2	2½	3 inch.

Sheet Flooring Brads, 11s. 9d. per cwt.
1-inch Cut Lath, 14s. per cwt. Cast Lath, 9s. 6d. per cwt.
6-inch 2-bolts Rim Locks, with Scotch Springs, best furniture, patent spindles, 15s. a-dozen.
6-inch 3-bolts Ward Round Mortise, with best furniture and patent spindles, 2s. 9d. each.
Improved Bow Latches, with best furniture, 7s. a-dozen.
P.S.—A List of Locks, Bolts, and other Ironmongery, on application.

TO BUILDERS, CABINET-MAKERS, and OTHERS.
Best Cut Sheet Flooring Brads, 12s. per cwt.
Fine Cut Clasp and Rose.

15s.	14s. 6d.	14s.	13s.	13s. per cwt.
1½	1½	2	2½	3 inch.

Cross Garnet Hinges, per dozen pair.

2s. 9d.	3s. 3d.	4s. 3d.	5s.	6s.	8s.	
10	12	14	16	18	20 in.	

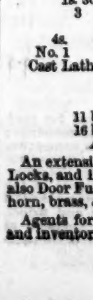
Best Bright Tower Bolts, per doz.

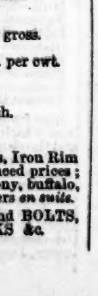
1s. 3d.	1s. 7d.	2s.	2s. 6d.	2s. 10d.	3s. 3d.	3s. 7d.
3	4	5	6	7	8	9 in.

Iron Rain-water Pipe.

9½d.	10½d.	1s. 1d.	1s. 5d.	1s. 8d. per yard.
2	2½	3	3½	4 inch.

Best London Glue, 38s. per cwt.
Cast Lath Nails, 10s. per cwt.
Air Bricks, 3s. 6d. per doz.
Hooping for bond, 8l. 10s. per ton.
Sash Weights, 5s. per cwt.
TERMS—NET CASH.
A price-list may be had on application.
A. L. PFEIL and Co.,
Wholesale Ironmongers, Brass Foundry and Nail Warehouse,
5 and 6, Broad-street, Bloomsbury, London.
AGENTS FOR LEA'S PATENT MORTISE LOCKS AND BOLTS.





TO BUILDERS AND CARPENTERS.

J. H. BOOBBYER and CO., late Sturch and Boobbyer, at their Ironmongery, Brass Foundry, and Nail Warehouse, No. 14, Stanhope-street, Clare-market, London, for the supply of Carpenters, Builders, Cabinet-makers, Upholders, &c., at wholesale prices.
Best Cut Sheet Flooring Brads, 12s. per cwt.
Fine Cut Clasp and Rose.

15s.	14s. 6d.	14s.	13s.	13s. per cwt.
1½	1½	2	2½	3 inch.

Best Bright Tower Bolts.

1s. 3d.	1s. 7d.	2s. 2d.	2s. 6d. per dozen.	
3	4	5	6 inch.	

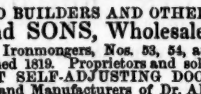
Best Patent Sash Line.

4s.	4s. 6d.	6s.	7s. 3d.	9s.	10s. 9d. per gross.	
No. 1	2	3	4	5	6	

Cast Lath Nails, 10s. per cwt. Sash Weights, 5s. per cwt.
Air Bricks, 3s. 6d. per dozen.
DR. ARNOTT'S VENTILATORS.
11 by 8 inches ..... 5s. each.
16 by 9 " ..... 8s. "
An assortment in Brass, Bronzed, Gilt, &c.
An extensive stock of Mortise Locks, Drawback Locks, Iron Rim Locks, and Latches, of every description, at very reduced prices; also Door Furniture, in china, amber, crystal, ivory, ebony, buffalo, horn, brass, &c., with Finger-plates, Bell-pulls and Levers *en suite*.
Agents for LEA'S PATENT MORTISE LOCKS and BOLTS, and inventors of SHIFTING BOLT MORTISE LOCKS &c.

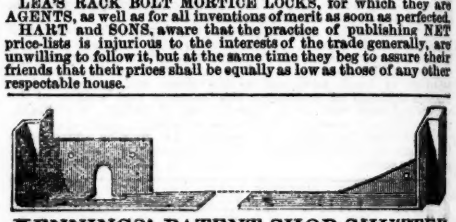
TO BUILDERS, CARPENTERS, &c.—
The undermentioned are the PRESENT PRICES of IRONMONGERY, at YOUNG'S, 194, Oxford-street. Every other article equally low. Orders executed upon receipt of remittance or a respectable London reference.

		2	2½	3 Inches.	
Cast Butts		5s. 3d.	7s. 6d.	11s. per 6 dozens.	
Cut Clasp	5d.	7d.	1s. 2d.	1s. 8d.	per
	4d.	6d.	10d.	20d.	1,000.
	Nos. 3	4	5	6	
Patent Line	6s.	7s. 3d.	9s.	10s. 9d. per gross	
	2	2½		3 Inches.	
Rain Pipe	9½d.	10½d.		1s. 1d. per yard.	



TO BUILDERS AND OTHERS.

HART and SONS, Wholesale and Manufacturing Ironmongers, Nos. 53, 54, and 55, Wych-street, Strand. Established 1819. Proprietors and sole Manufacturers of PITT'S PATENT SELF-ADJUSTING DOOR FURNITURE and SPINDLES, and Manufacturers of Dr. ARNOTT'S VENTILATING CHIMNEY VALVES.
HART and SONS solicit the attention of Builders, House Decorators, Smiths, Bell-hangers, &c. &c. to their extensive and well selected stock of DOOR FURNITURE in every suitable material, *en suite* with finger-plates, bell-pulls, levers, &c., and also to their
LOCKS and LATCHES in mortice, rim, drawback, iron gate, cabinet &c., of all qualities, including Barron's, Bramah's, Chubb's, and Pitt's Patent.—To their
GENERAL IRONMONGERY, wrought and cut nails, screws hinges, bolts, &c. &c.
BRASS FOUNDRY.—Bell cranks of all descriptions, cornice poles, picture rods, skew door handles, desk and hat rails, window guards, Espagniolette bolts, &c. &c.
DOOR SPRINGS and HINGES, including Redmund's, Smith's, Gerish's, and Cotterell's patents.
WINDOW BLIND FITTINGS of the most approved principle.
LEA'S RACK BOLT MORTICE LOCKS, for which they are AGENTS, as well as for all inventions of merit as soon as perfected.
HART and SONS, aware that the practice of publishing NET price-lists is injurious to the interests of the trade generally, are unwilling to follow it, but at the same time they beg to assure their friends that their prices shall be equally as low as those of any other respectable house.



JENNINGS' PATENT SHOP SHUTTER SHOES and FASTENERS, INDIA RUBBER TUBE-COCKS, and WATER CLOSETS, can be had through any plumber or ironmonger. The only manufacturers are—JOHN WARNER and SONS, Crescent, Jewin-street, and GEORGE JENNINGS, Patentee, 29, Great Charlotte-street, Blackfriars-road.—Descriptive drawings and testimonials sent free, on application.

SNOXELL'S PATENT SAFETY REVOLVING WOOD SHUTTERS, Manufactory, 98, REGENT-STREET and 121, CHANCERY-LANE. Patent sealed on the 4th day of February, 1845, for Fourteen Years, for Improvements in Revolving Shutters of WOOD and IRON, consisting of Six Methods of Raising and Lowering Shutters, without Machinery, and Two for Hinging and Sheathing the Edges of Wood Laths with Iron.—The Patentee having fixed up some hundreds, will feel pleased in forwarding the Testimonials of Architects, Principals of large Establishments, and others, having them now in use, which fully guarantees the Patentee in stating they are beyond dispute superior to any other Revolving Shutter for durability, security and simplicity, without the use of cog-wheel worm and screw gear or any other complicated machinery employed by other makers.

SOHO CROWN, SHEET, PATENT PLATE, ORNAMENTAL, and PLATE GLASS WAREHOUSE, 23, Soho-square, London.—ALFRED GOSLETT begs to call the attention of the trade to his large and valuable STOCK of the above descriptions of GLASS, which he can offer at the very lowest wholesale prices, delivered either in crates, as manufactured, or cut to size and glazed.

PATENT PLATE GLASS.—HETLEY and CO. beg to inform Architects, Builders, and the Trade generally, that their new Tariff of PRICES for the above is now ready, and will be forwarded on application. A REDUCTION of about 40 per cent. has been made on the usual Glazing sizes.—Sheet, Crown, and Ornamental Window-Glass Warehouse, 25, Soho-square, London.—ROUGH PLATE GLASS.

CHEAP ORNAMENTAL GLASS.—I beg to inform my friends and the public, that I have now completed a new ENGINE, and, owing to the facility with which I can execute orders, I am enabled to reduce my former prices considerably. The prices are now from ONE SHILLING PER FOOT SUP., and borders from SIXPENCE PER FOOT RUN. A large quantity of the cheapest patterns always in stock. Embossing and painted work on the most moderate terms.—CHARLES LONG, No. 1, King-street, Baker-street, Portman-square.—Cash only.

E. and W. H. JACKSON beg to call the attention of Builders and the trade to the reduced prices of their PATENT PLATE GLASS. BRITISH PLATE, silvered and for glazing, of unrivalled quality and finish. ROUGH PLATE, CROWN, SHEET, COLOURED, and ORNAMENTAL GLASS, in every variety, of the best manufacture, and at the lowest terms. List of prices, estimates, and every information sent on application. THE ROYAL ARMS, richly painted on glass,—size, 86 inches by 58,—well adapted for a public Company's Hall; to be seen at their warehouse, 315, Oxford-street.

HURWOOD'S PATENT APPARATUS for MOVING and FASTENING WINDOWS, &c.
GENERAL DESCRIPTION.—This invention recommends itself in all its applications by its simplicity, efficiency, and certainty of action, and entirely dispenses with all pulleys, weights, cords, springs, setopes, fastenings, &c. A principal feature in the invention is the application of the screw, or worm working into a wheel or rack, as a prime mover. The apparatus moves with ease and certainty; is very durable, not likely to be out of order; is perfectly secure in every position, and is applicable to conservatories, French casements, folding-shutters, stables, ventilators, skylights, ship scuttles, deck and stern lights, and to all descriptions of windows, and is particularly adapted to public buildings, where security is an important object, as in lunatic asylums.
Further particulars may be had upon application to the Patentee, and also the terms upon which licenses are granted.
*** Illustrative Catalogues may also be obtained from the Patentee, Ipswich, by inclosing twelve stamps, to cover postage.